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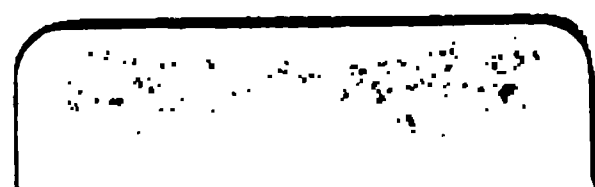
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NAUTICAL TABLES

DESIGNED FOR THE USE OF BRITISH SEAMEN

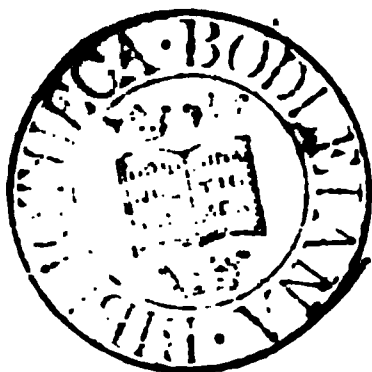
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EXPLANATION AND USE OF TABLES.

Table (a), p. 1.—This table contains the whole correction of the sun's altitude, involving dip, refraction, semidiameter, and parallax. The lower limb is supposed to be observed. When the upper limb is observed proceed as in the Table, and deduct 32'.

Table (b), p. 2. *Parallax in Altitude for Planets*.—Enter with the hor. parallax of a planet (supposed to be known from the Nautical Almanac) at the top, and the app. altitude of planet at the side. Thus will be found the parallax in altitude, to be *added* to the app. alt. to get the true alt. The app. alt. is first supposed to be corrected for refraction, as for a fixed star. See Tab. (n.)

Table (c), p. 2. *Correction of A for Planet in Clearing Distance*.—For explanation of this table, see that of Table (w).

Table (cc), p. 2. *Sun's Parallax in Altitude*.—The effect of parallax in alt. for the sun, is included in correction of Table (m): it is put down here, as it is occasionally of use considered separately. (See Navigation on Occultations, p. 180.)

Table (d), p. 3. *Points of Compass, &c.*—This table is of use in turning the points of the compass into degrees, and conversely: also, in finding at once the log. sines of points and quarter points.

Table (e), p. 3. *Dip of the Sea Horizon*.—The altitude of a heavenly body is taken in the open sea with Hadley's quadrant, in doing which the image is brought down to the apparent sea horizon, which is below the level of the eye. The observed altitude is on this account something too great. The necessary correction is put in Table (e), which is entered with the estimated height of the eye above the sea. The correction or dip taken out is *subtractive*.*

* In computing this table, it is necessary to consider the effect of horizontal refraction in raising the visible sea horizon, which has been found to be about 8-100ths of the dip independently of this correction. But this effect varies with the state of the air near the sea horizon. Hence the correction applied for dip may frequently be erroneous; and this is one cause why altitudes taken at sea, particularly those taken near the horizon, are not to be depended on where great accuracy is required.

Table (f), p. 3. *Dip of a Shore Horizon*.—Sometimes the observer is obliged to bring the image down to the shore of an island or continent, over which the heavenly body happens to be. In this case the dip is greater than in the open sea. The table is entered with the estimated height of the eye and the estimated distance of the shore; the correction taken out is *subtractive*.

Table (g), p. 4. *Augmentation of the Moon's Semidiameter*.—The semidiameter of the moon put down in the Nautical Almanac is computed on the supposition that the spectator is at the centre of the earth; whereas he is on the surface; and therefore, when the moon is above the horizon, he is nearer to the moon than if he were at the centre. Consequently the apparent semidiameter is something greater than what is taken out of the Nautical Almanac. The No. of seconds to be added is taken from Table (g), which is entered with the moon's apparent altitude at the side, and the semidiameter to the nearest 10'' at the top.

Table (h), p. 4. *Reduction of Horizontal Parallax and Latitude of Place for Figure of Earth*.—The *hor. parallax* of the moon in the Nautical Almanac is put down for a place on the earth's equator. At any other place on the earth it will be something less; since, on account of the compression towards the poles, the earth's semidiameter is there less than at the equator. The seconds to be subtracted are found in this table by entering with *hor. par.* at the top, and with *lat.* at the side.

The *latitude* of a place on the earth is the arc between the true zenith and the equator: this is called the latitude on the *spheroid*. It is occasionally necessary to reduce this to the latitude of the same place, on the supposition that the surface of the earth at the same place is exactly *spherical*. The seconds to be subtracted for this purpose are put down in the last column of this table. (See Occultation of Fixed Stars in Navigation.)

Table (i), p. 4. *Reduction of Semidiameter on account of Refraction*.—In correcting a lunar distance it is usual to apply the semidiameter of the moon, as seen from the earth's centre, corrected only for augmentation (Table g); but generally a further correction should be applied for the effect of refraction. The extremities of any diameter of the moon inclined to the horizon, being at different altitudes, are unequally raised by refraction, the lower extremity being the more raised; hence a contraction of the diameter takes place. The necessary correction for the semidiameter, which is always *subtractive*, is found from this table, by entering it with the inclination of the line between the bodies observed, as the moon and a star, and the altitude at the side; the inclination may be estimated by the eye. A similar correction should be applied also to the sun's semidiameter.

Table (k), p. 5. *Correction in finding Moon's Meridian Passage*.—In *west* longitude the moon passes the meridian later, that is, longer after the sun, than at Greenwich; because then her distance from the sun in R. A. (reckoning from W. to E.) is greater than it was at the Greenwich meridian passage. In *east* longitude the meridian passage takes place sooner. The necessary correction of the time of the Greenwich passage is taken from this table, by entering it with the longitude at the top, and at the side the difference between the times of two successive Greenwich passages, one on the given day, the other on the day following, in *west* longitude, but the

difference between the passages on the given day and the day preceding, in east longitude.

Table (l), p. 5. *Correction in finding Time of High Water.*—By the change tide is meant the high water when the moon and sun are in conjunction, or appear from the earth in the same part of the heavens. If the moon and sun always remained in this position, the time of high water would be the same always with the change tide: but as this is not the case, a correction becomes necessary; which is found from this table by entering it with the time of the moon's meridian passage for the place at the side, and the moon's semidiameter (taken by inspection from the Nautical Almanac) at the top.

Table (m), p. 6. *Correction of the Sun's Apparent Altitude.*—The sun's apparent altitude is greater than its true altitude on account of refraction, and less on account of parallax. But since the refraction is greater than the parallax, the necessary correction on the whole, or the difference of refraction and parallax, must be subtractive. To find therefore the true altitude of the sun from its apparent altitude, enter this table with the latter, and take out the corresponding number in the column marked *corr.*, which subtract.

The correction taken from this table, if necessary, should be increased or diminished by the number in Table (z 4), p. 380, Correction of Mean Refraction.

Table (n), p. 8. *Correction of a Star's Apparent Altitude.*—A star has no parallax; hence the only correction is to be applied to its apparent altitude, in order to get the true altitude, is for refraction, which is put down in this table in the column marked *corr.* The table is entered with the star's apparent altitude, and the correction taken out is subtractive.

The refraction put down in this table, and used in the last, is computed from Dr. Young's Table of Refraction (see Nautical Almanac).

Tables (o), p. 10. *Table for finding when the sun is on the prime vertical, and Azimuth Table.*—By these two useful tables, in combination with the Traverse Table, the variation or deviation of the compasses may be found at sea with great facility and sufficient exactness. These operations are rendered the more necessary by the present method of constructing ships of iron.

Table (p), p. 13. *Greenwich Date Logarithm for the Moon.*—By means of this table and the table of proportional logarithms, the proportional part of the moon's declination, right ascension, &c., for any Greenwich date, may be very easily computed as follows. Take from this table the logarithm corresponding to the hours and minutes of the Greenwich date, or if it is greater than 12 hours, with the excess above twelve hours. To this logarithm add the proportional logarithm of the change of the declination, right ascension, &c., in the 12 hours in which the date lies; the sum will be the proportional logarithm of the part required.

If the change of the declination or right ascension be more than 3° , use the proportional logarithm of half the change, and double the proportional part which results. This double will be the part required.

Table (q), p. 14. *Greenwich Date Logarithm for the Sun.*—The proportional part of the sun's declination, right ascension, &c., may be found by

means of this table and the table of proportional logarithms as follows. Take from this table the logarithm corresponding to the hours and minutes of the Greenwich date, to which add the proportional logarithm of the change of the sun's declination, right ascension, &c., in the 24 hours in which the date lies. The sum will be the proportional logarithm of the part required.

Table (qq), p. 16. *Proportional Logarithms for Seconds and Tenths of Seconds*.—This table may be of use in finding the proportional part, where the daily or half daily difference is small, and expressed in seconds and tenths of seconds. See explanation of Tables (p), (q), and (r.)

Table (r), p. 13*. *Proportional Logarithms*.—It is frequently necessary to work proportions by logarithms, whereof one of the terms is 3 hours. To do this by common logarithms would be extremely tedious, since it would be necessary to reduce every term into seconds, then to take their logarithms from the tables, and finally to bring the resulting seconds into hours, minutes, and seconds. To shorten such operations, the logarithms of every number of seconds below 3 hours are subtracted from the logarithm of the seconds in 3 hours. The results are arranged in a table, and called proportional logarithms; the corresponding hours and minutes being placed at the top of the page, and the seconds at the side.

Since degrees, minutes, and seconds, have the same proportion to each other as hours, minutes, and seconds, it is manifest that the same numbers will be proportional logarithms of any number of degrees, minutes, and seconds, less than 3° .

If any term of four proportionals be required, each of which terms is less than 3^h or 3° , it may be computed by proportional logarithms in the same manner as by common logarithms. If one of the terms be 3^h or 3° , its proportional logarithm need not be considered in the operation, since it is equal to 0. Hence appears the use of proportional logarithms in finding Greenwich time from the distance of the moon from the sun or a fixed star. The variation of the distance in 3^h is taken from the Nautical Almanac, and the proportional logarithm of this is subtracted from that of a less variation of distance. The result is the proportional logarithm of the time required for the latter variation.

Table (s), p. 32. *Log Sine to Seconds*.—Since the sines of small arcs change not only very rapidly, but also irregularly, the common method of proportioning for seconds is both troublesome and erroneous. On these accounts it was thought proper to put down the log sines of arcs as far as $50'$ to seconds; the same numbers are the log cosines of arcs from 90° down to $89^{\circ} 10'$ to seconds. If the *log tangent* of a small arc within the limits of the table be wanted, it may easily be found by subtracting the log cosine (Table t) from the log sine (Table s), adding 10 to the index of the log sine

Table (t), p. 37. *Log Sines, &c.*—An angle is put down in this table at the top and left hand side, if less than half a right angle; and at the bottom and right hand side, if greater than half a right angle; the angles included on the whole being from 0 to a right angle. The angle is put down both in $^{\circ} ' ''$ and in h. m. s.; the columns of log sines, log cosines, &c., are marked at the top or bottom; the titles at the top must be used, when the angle is less than 45° , or 3^h ; and at the bottom when greater than 45° , or 3^h .

If an angle be greater than 90° , or 6^h , take it from 180° , or 12^h , and find the log sine, &c., for the remainder.

This table is useful in turning $^\circ ' ''$ into h. m. s. and conversely. If an angle expressed in $^\circ ' ''$ be greater than 90° ; allow 6^h for 90° , and look for the excess above 90° . If an angle in time be greater than 6^h , allow 90° for 6^h , and look for the excess above 6^h .

Table (u), p. 217. *Logarithms of Numbers*.—The first two pages of this table contain the logarithms of numbers from one to a thousand; the other pages contain the logarithms of numbers from 1000 to 9999. To find the logarithm of any given number proceed as follows. If the number do not consist of more than four figures, they may all be found in the column of nat. numbers, and opposite them will be found the decimal part of the logarithm. The index of the logarithm is equal to the number of places, which the first left hand significant figure of the natural number is from the place of units; and it will be positive, if the first significant figure be a whole number or integer, and negative, if it be a decimal fraction. Thus the logarithm of 234 is 2.369216, and that of 0.234 is $\bar{1}.369216$. If the number of figures in the given nat. number exceed four, look for the first four figures, and take out the corresponding logarithm; then look for the 5th figure among the last figures, that is, in the unit places of the nat. numbers which lie in the space of the column, wherein the first four figures have been found. Place the opposite figures in the column of prop. parts under the last figures of the logarithm already taken out, the last figures in each under one another. Then look for the second supernumerary figure, if there be one in the given nat. number, and put the corresponding figures in the prop. parts, (carrying them one place to the right) under the last proportional part written down. Again, look for the third supernumerary figure in the given nat. number, if there be one, and put the corresponding part (carrying them still one place farther to the right) under the last prop. parts put down; and thus go on as far as it may be necessary. Lastly, add all the numbers, as they are put down, together; and take the result, to the nearest sixth place, for the logarithm required (see example in next page).

If any of the supernumerary figures be a cipher, pass over this, but take care to carry the next prop. parts put down, *two* places to the right.

To find from the table the nat. number of a given logarithm, proceed as follows. Look for the decimal part of the given logarithm in the column of logarithms. If this be found exactly, take out the corresponding number from the column of the nat. numbers. Then insert the decimal mark, so that the first significant figure may be as many places from the unit's place, as there are units in the index of the given logarithm, to the left or right of the units, according as the index is positive or negative.

If there is not a sufficient number of places in the nat. number, when the index is positive, ciphers must be added to the right.

When the index is negative, put a cipher in the unit's place, and then other ciphers in continuation in the first decimal places, so that the first significant figure may be as far from the units, as is denoted by the index.

When the decimal part of the given logarithm cannot be found exactly, in that case, find in the column of logarithms a number next below the decimal of the given logarithm; and take the difference between this and the said decimal. Look in the column of prop. parts, in the space from which the next less logarithm has been taken, for the number next below this difference; the last figure, that is, the figure in the unit's place, of the nat.

number opposite, will be the first figure to be added in continuation to the nat. number corresponding to the next less logarithm.

Take the number in the column of prop. parts next below the aforesaid difference, from the difference itself, and add to the remainder a cipher. With this look again in the column of prop. parts for the number next below it, and the last figure in the nat. number opposite will be the second additional figure.

Thus go on as far as may be necessary, taking the last additional figure to the nearest unit.

If the difference, or remainder with the addition of one cipher, be less than any of the numbers in the column of prop. parts, the corresponding additional figure will be a cipher. Then add another cipher to the remainder, and proceed as above *.

***Ex.* Required the logarithm of 623472 and the nat. number of the logarithm 5.372642.**

[illegible]

Cologarithms are easily obtained from the table of logarithms *at sight*. Set down the difference of every figure in the logarithm (characteristic as well as mantissa) from 9, proceeding from left to right, until the last significant figure, which subtract from 10. Strike out as many tens from characteristic of the result as cologarithms have been used in the operation.

Table (v), p. 248. *Nat. Versines*.—To find the nat. versine of a given arc from this table, look for the degrees and minutes on the left-hand page, the degrees at the top and the minutes at the side; and take out the corresponding number, observing that where only the last five figures are put down, the preceding ones printed at every third must be added. Then putting the finger on the right-hand page at the nearest half degree to the degrees and minutes just looked out, move it down the corresponding column till it is opposite to the seconds of the given arc, as seen in either side column. The number where the finger is placed will be the parts for the seconds, to be added to the number taken from the left-hand page, the last figure under the last figure.

To find the arc for any given nat. versine, look for the next less in the left-hand page, and take it from the given one. At the same time, take out the degrees and minutes corresponding to the next less. Put your finger on the right-hand page at the nearest half degree to the degrees and minutes just taken out, move it down the corresponding column till you come to the difference between the given versine and the next less as just found, or to

* The index for whole numbers is always *one less* than the No. of integers or whole numbers. When the index is not negative, the No. of integral figures or whole numbers in the nat. number is *one more* than the index denotes.

the nearest number thereto. Then the seconds on either side between which the figure is placed, will be the seconds in the required arc, to be written after the degrees and minutes taken out.

If the minutes of an arc be nearly $15'$, or $45'$, in that case, where great accuracy is required, the mean of two parts for seconds may be taken, for the next less half degree and the next greater.

The versines of arcs expressed in time as far as 36^m are given in the three first pages of the table. This part of the table will be found useful, particularly in computing the latitude by several altitudes of a heavenly body taken near the meridian by the following rule.

Take the time of each observation by a time-keeper, the error of which on apparent time is known, and thence deduce the distance in time between each observation and noon, that is, each hour angle in time; take out the nat. versines of these hour angles, and dividing their sum by their number, get the mean versine. Add the corrected or true altitudes together, and dividing by their number get the mean true altitude, and thence the mean true zenith distance. For a Greenwich date corresponding to noon at the place, take from the Nautical Almanac the sun's declination; with this and the mean true zenith distance, as if it were the meridian zenith distance, find an approximate latitude. Then add together 5.314425 , log cosine approximate latitude, log cosine declination, log cosec. mean true zenith distance, and log. of the mean nat. versine (adding 4 to proper index). The sum, rejecting the *tens* from the index, will be the log. of a number of seconds, which find from the tables, and subtract them from the mean true zenith distance (under the pole add): the result will be the true meridian zenith distance, from which and the declination, deduce the true latitude as usual.

The *nat. sine* of any angle may be taken from this table, by finding the nat. vers. of an angle greater than the given one by 90° , rejecting the first figure 1. If the angle be above 90° , take the nat. sin. of its supplement to 180° , in this manner. To find the nat. cosine of an angle, take the nat. sine of what it wants, or is above 90° , in the same manner.

Table (w), p. 284. *The correction of the Moon's Altitude and the Auxiliary Angle A.*—The effect of refraction on the moon's altitude being subtracted from the effect of parallax, the remainder is called the *correction in altitude*. To find it from this table, look for the half page having the degree of apparent altitude at the corner; put your finger at the top on the minutes of the horizontal parallax, and move it down the middle line between the column marked *corr.* and the column marked A with 60° under it, till you come opposite the minute at the side nearest to the minute of the apparent altitude in the proper half page. Take out the number at that point to the left of the aforesaid middle line, that is, in the column marked *Corr.* To this add the parts for the seconds of the horizontal parallax taken from the column marked *corr.* at the right hand side of the page. The result will be the correction in altitude which is required.

Should the horizontal parallax be between $53'$ and $54'$, then take the correction out for $54'$, and subtract the parts for the seconds which the horizontal parallax is below $54'$. Thus suppose the horizontal parallax is $53' 57''$, and the moon's apparent altitude is $18^\circ 16'$; then the correction corresponding to $54'$ of horizontal parallax and the altitude $18^\circ 16'$ is $48' 23''$, and the parts for $3''$ at the right hand side of the page is $3''$: consequently the correction required is $48' 20''$.

This table also contains the auxiliary angle A, which is used in clearing the distance by the method given in p. 129 of Navigation. The minutes and seconds, to be added to the 60° at the top, are taken out of the table at the same time with the correction in altitude, and in a similar manner; being found on the right of the middle line under the minutes of the horizontal parallax, and opposite the minutes of altitude, or the nearest number thereto. Two additions are made to the number so taken out, one taken from the column A opposite to the seconds of the horizontal parallax in the right hand margin, and the other from the small Table at the bottom of the right hand side of the page, for the nearest degree put down there of the sun or star's altitude; from the second or third column, that is, from the column marked \odot or \times , according as the sun or star is observed.

When the moon's distance from a planet is observed, take the second correction of A from the Table (c), p. 2, instead of the column marked \odot or \times .

If the horizontal parallax is below $54'$, the value of A corresponding to $54'$ and the apparent altitude must first be taken out; then the parts for the seconds which the horizontal parallax is below $54'$ must be subtracted; and thirdly, the small correction for the sun or star's altitude must be added.

Table (x), p. 327. *Traverse Table*.—This table is used principally in working a day's work. The distance run is looked for at the top, and the corrected course, either in points or in degrees, at the side; if less than four points, or 45° , at the left hand side; if greater than four points, or 45° , at the right hand side. The *diff. lat.* and *dep.* will be found in the columns so marked, in the former case at the top, in the latter at the bottom.

This table is also frequently used in turning *dep.* into *diff. of long.*, by looking for the *mid. lat.* as a *course*, and the *dep.* as a *diff. lat.*; the *dist.* will then be the *diff. long.*, also conversely; if the *mid. lat.* be looked for as a *course*, and the *diff. long.* in the *dist.* column, the *dep.* will be the corresponding number in the *diff. lat.* column.

Table (y), p. 364. *Meridional Parts*.—At the earth's equator a degree of longitude is equal to a degree of latitude in length; but as we approach the poles the degrees of longitude become less and less, while the degrees of latitude (supposing the earth to be a perfect sphere) remain the same. In a Mercator's chart the degrees, minutes, &c. of longitude are made every where of the same length; hence, to keep up their proper proportion, it is necessary to increase the degrees, minutes, &c. of latitude. A formula is investigated, which gives the value of any latitude properly increased for this purpose; and the miles contained in the latitude so increased are called its *meridional parts*. The meridional parts are taken by inspection from this table for any given latitude, entering with the degrees at the top, and with the minutes at the side. For all the common purposes of navigation it will be sufficient to take out the meridional parts to the nearest unit; that is, to the nearest figure before the decimal mark or dot.

Table (z), p. 373. *Bearing Amplitude and Time Amplitude at the Rising and Setting of the Sun*.—By the bearing amplitude of the sun is meant the arc of the horizon intercepted between the east point and the point where the sun rises, or between the west point and the point where it sets. It is reckoned from the east and west points towards the north or south, according as the declination is north or south.

By the time amplitude is meant the time the sun rises before or after

6 A.M., or sets before or after 6 P.M. When the latitude and declination are both north or both south, the sun rises so much before 6 A.M., and sets so much after 6 P.M. When the latitude and declination are one north and the other south, the sun rises so much after 6 A.M., and sets so much before 6 P.M.

Each of these amplitudes is found by entering the table with the nearest degree to the declination at the top, and the nearest degree to the latitude at the side. This will be sufficient for most of the purposes of the table.

Table (z 1), p. 377. *The Time from Noon, at which the True Bearing of the Sun is E. or W.*—The most advantageous time for taking an altitude of the sun at sea, from which apparent time is to be deduced, is when its true bearing is E. or W., provided its altitude above the horizon is then at least 6 or 7 degrees. This time may be known by inspection from the tables, entering it with the nearest degree to the declination at the top, and the nearest degree to the latitude at the side.

Table (z 2), p. 378. *Equation of Second Differences for 12 hours.*—Since the moon's latitude, declination, right ascension, &c. do not vary uniformly for 12 hours, the result of a single proportion will not give the correct change after noon or midnight up to the Greenwich date. The first proportional part therefore is corrected by means of a table of second differences as follows.

To find the moon's correct latitude for any given Greenwich date, take from the Nautical Almanac two latitudes, which immediately precede the given date, and two which immediately follow it; write these in the order of time, under each other, marking each with its proper name N or S. If the second be greater than the first and they have the same name, put down their difference with the name of either; if the second be less than the first, and they have the same name, put down their difference with a name different from that of either; if the two latitudes have different names, put down their sum with the name of the latter. A similar rule must be followed for the second and third latitude, and for the third and fourth. Afterwards take the difference of these first differences in a similar manner, marking the result as directed. Then, if the two results have the same name, take half their sum and give it the name of either; if they have different names, take half their difference, and give it the name of the greater.

Enter the *Table of Second Differences* with the hours and minutes the Greenwich date is after noon or midnight, at the side; and with the mean second difference at the top, first the minutes and then the seconds (see the Table). The sum of the parts taken out will be the *equation of second differences*, to which put a contrary name to that of the mean second difference. Then compute the first proportional part as usual, putting to it the name of the middle first difference; under this put the equation of second differences, and if the names be like, take the sum with the name of either; if the names be unlike, take the difference with the name of the greater; the result will be the correct proportional part to be applied to the second latitude.

The declination of the moon is taken out in a similar manner.

The right ascension of the moon may also be taken out thus: putting to each right ascension the sign $+$ instead of the name N or S as used above and the sign $-$ when the name is changed as above.

This observation applies also to the longitude of the moon

Ex. Required the moon's latitude at Greenwich on May 18, 4^h 20^m.

	Latitude.			
17	Midn. . . . 4° 59' 49" S			
18	Noon . . . 5 0 29 S	First Diff.		
		0' 40" S		
18	Midn. . . . 4 57 32 S		Second Diff.	
		2 57 N	3' 37" N	
19	Noon . . . 4 50 46 S			M. Second Diff.
		6 46 N	3 49 N	3' 43" S
(p)	.44236		1' 3".8 N	
	1.78545		0 25 .7 S	
	<hr/>		<hr/>	
	2.22781		0 38 .1 N	
			5 0 29 S	
			<hr/>	
		Lat.	4 59 50 .9 S	

Table (z 3), p. 379. Mean Motion of the Sun in Right Ascension for Sidereal Hours.—This table contains the difference between any interval as expressed in sidereal time, and the same interval as expressed in mean solar time. It is particularly useful in turning sidereal time into mean solar time as follows. From sidereal time, increased if necessary by 24 hours, subtract the right ascension of the sun at the preceding apparent noon. The remainder will be the interval between apparent noon and the given instant, as shewn by a sidereal clock. From this subtract the mean increase of the sun's right ascension in that interval so expressed, which increase is taken from this table. The remainder will then be the distance from apparent noon as shewn by a mean solar clock. To this apply the equation of time at the preceding noon with its proper sign as in the Nautical Almanac, and the result will be the distance of the given instant from mean noon, as shewn by a mean solar clock, or it will be mean time.

Table (z 4), p. 379. Correction of Mean Refraction.—The amount of refraction depends on the weight and temperature of the air. The barometer at the surface of the sea is supposed to stand at 30 inches and the thermometer at 50°, when the air is at its mean state in both respects. On this supposition the tables of correction for refraction and parallax, pp. 6, 7, 8, 9, and p. 284 to 326, are formed. If the barometer and thermometer do not stand so, the corrections taken from those tables must be increased or diminished by the numbers taken from Table (z 4). When the quicksilver in the barometer is higher than 30 inches, or that in the thermometer is higher than 50°, the number of seconds taken from Table (z 4) must be applied with the signs at the head of the columns, for the sun or a star; when the quicksilver stands below these heights in either, they must be applied with the signs at the bottom, for the sun or a star. But to the correction of the moon's altitude, as put down in Table (w), these numbers must be applied with contrary signs to those found in this manner.



Table (o) 1, p. 12. An imaginary sun moving in right ascension with the mean motion of the true sun, or $3' 56''.556$ in 24 mean solar hours, is called the *mean sun*. When such a supposed sun is on the meridian of any place, its right ascension is the same there as *sidereal time* (see Navigation); under which heading it is put down in the Nautical Almanac for every mean noon at Greenwich.

For any other Greenwich date the numbers taken from this Table—first, for the hours; secondly, for the minutes; and, thirdly, for the seconds—are added to the right ascension (or sidereal time) at the preceding noon. The result is the right ascension of the mean sun for the Greenwich date.

Table (o) 2, p. 12. A diameter of the earth being supposed to be produced outside the earth's surface to any height as h , and a tangent as t to be drawn from the extremity of h to the surface of the sea: then, from the properties of the circle, $t^2 = h \times (\text{diameter} + h)$: or, taking the diameter 41796480 feet, $\log. t = \frac{1}{2} \left\{ \log. h + \log. (41796480 + h) \right\}$. From this formula t is computed for different heights h , and put down in this Table. It is evidently the distance at which a high object, as the top of a mountain whose height is h , might be seen by an eye supposed to be placed on the surface of the sea. If t be supposed to be produced beyond the point where it touches the sea, so as to reach any elevated spot where the eye may actually be placed, as the mast-head of a ship, whose height is h' , the distance it is thus produced, as t' , may evidently be found from the Table by entering it with h' ; and then, adding t' to t , the sum will be the whole distance of the eye from the object whose height is h .

Table (o) 3, p. 12. If δ (computed as in p. xi.) denote the 2nd difference of any quantities put down for every 1^h or 3^h , as the moon's R. A. in the Nautical Almanac or the lunar distances, then the *equation of 2nd diff.* is $\delta \cdot x \cdot \frac{x-1}{2}$, x being the fractional part of 1^h or 3^h , which the Greenwich date is beyond the preceding 1^h or 3^h . In Table (o) 3 the value of $x \cdot \frac{x-1}{2}$ is put down, so that, if δ in seconds be multiplied by the number found from this Table, the result will be the *equation of 2nd diff.*, by which an element to be computed for any Greenwich date may be corrected, in the manner directed in p. xi., where the interval is 12^h .

When the Greenwich date is required to be found from the given element, this is first computed, as usual, on the supposition of uniform motion for 1^h or 3^h ; the *equation of 2nd diff.* is then computed in the manner pointed out in p. xi. Then subtracting from the *prop. log.* of this equation the *prop. log.* of the excess of the Greenwich date first got above the preceding 1^h or 3^h , the result will be the *prop. log.* of the required correction on account of variable motion. This correction being found, it must be added when the change of the element is accelerated, that is, when the differences of the element in question for 1^h or 3^h increase; otherwise it must be subtracted.

But this correction is most easily taken from a Table in the Nautical Almanac, p. 484.

Table (o) 4, p. 12. If x be the true lunar distance, d the apparent dis-

tance, A and A' the true altitudes, and a and a' the apparent altitudes; then
 $\text{vers. } x = \text{vers. } (A - A') + \text{vers. } \theta$, where $\log. \text{havens } \theta = \frac{1}{2} \log. \text{havens}$
 $(d + \overline{a - a'}) + \frac{1}{2} \log. \text{havens } (d - \overline{a - a'}) + \{ \log. \sec. a + \log. \cos. A - 20 \} +$
 $\{ \log. \sec. a' + \log. \cos. A' - 20. \}$ Table (o) 4 contains each expression
 between the brackets, supposing the body, as a fixed star, to be affected only
 by refraction (see Navigation, Lunar Observations, when spheroidal figure of
 earth is considered). And the column for the sun contains the expression
 for the sun as affected both by parallax and refraction.

Table of Logistic Logarithms (o) 5. If there be a proportion consist-
 ing of four terms, two of which are expressed in time and two in degrees, or
 all are expressed in time or in degrees, one of the terms being 1^h or 1° , and
 none of them being greater than 1^h or 1° ; then, any one unknown and
 required term may be easily found by means of this Table. Thus, let 1^h
 $: a :: b : c$ be the proportion; then the Table contains what the log. of
 seconds in each term wants of the log. of 3600, the number of seconds in 1^h
 or 1° , and this is called the *logistic logarithm*. (*logc. log.*) of that term. The
logc. log. of 1^h or 1° is therefore 0, and in the proportion just stated, any one of
 the three terms, a , b , c , may be found by adding or subtracting the *logc. log.*
 of the two others supposed known: if the required term be an extreme term,
 as c , by adding: if a mean or middle term, as b or a , by subtracting. The
 result will be the *logc. log.* of the required term, which may be taken, there-
 fore, from the Table.

Table of Prop. Parts, p. 216. A principal use of this Table is to take
 out log. *sin.*, log. *cos.*, &c., for seconds of arc. To do this; take out of the
 Table of log. *sin.*, log. *cos.*, &c., the difference for $15''$ of arc. Look for this
diff. in the left marginal column of this Table of Prop. Parts, under 15; then
 the *diff.* for any odd seconds above the next less $15''$, for which the log. *sin.*,
 log. *cos.*, &c., is given, will be found in the same horizontal line, and under
 the said odd seconds in the extreme heading in a line with 15. In using
 this Table it must be particularly noticed that some of the last figures, under
 the heading 15, may be considered as decimal fractions, in which case, the
 same number of decimal fractions must be supposed in the number taken out.
 Let the log. *sin.* of $12^\circ 33' 23''$ be required. The log. *sin.* of $12^\circ 33' 15''$ is
 9.337185: the *diff.* for $15''$ is 141, the nearest to which under 15 is 140,
 the last 0 in 1400 being considered a decimal fraction. The corresponding
 number under 8 (which $23''$ is above $15''$) is 74.7, where the last figure is
 supposed a decimal fraction. Adding, therefore, 74.7 or 75 to 9.337185,
 we have the required log. *sin.*, namely, 9.337260. . . . The mode of finding
 an arc to the nearest second, by means of this Table, will be apparent from
 the following example. Let the arc be required corresponding to log. *sin.*
 9.337260. The next in the Table of log. *sines* is 9.337185, which is less
 than the given log. *sine* by 75. Looking for the nearest to 75 in the same
 horizontal line with the *diff.* for $15''$ or 141, considering in both cases the
 last figure as a decimal fraction, we find 8 at the top. Consequently, the re-
 quired arc is $12^\circ 33' 15'' + 8''$, or $12^\circ 33' 23''$.

This Table may be used also in a similar manner, when the prop. part
 is given for 1^h or 60^m ; or for 12^a ($*12^*$), as in the case of the moon's hor
 parallax and semidiameter.

Tables (Aa Bb) of Logarithmic Differences, p. 382-4.

The altitude and horizontal parallax of the moon and the alt. of the sun or a star given, to find the log. difference.

Take out the log. diff. corresponding to moon's app. alt. either in the left or right side column and under the hor. parallax at the top, and write down in a corner of the paper or elsewhere, the diff. of 1° of \odot 's alt., and the diff. of $1'$ of parallax,* then turn to table (Bb), and take out the proportionate parts for the minutes of alt., and for the seconds of parallax, and also the sun's or a star's correction from the bottom of table (Aa); and add the sum of these three quantities to the log. difference taken out, and you have the log. difference required.

Note.—Should the moon's alt. be to the degree, add the diff. of 1° of alt. to the log. difference; and when the hor. par. is only to the minute, add in the same manner the diff. of $1'$ of parallax.

Ex. 1. \odot app. alt. $16^\circ 10'$, hor. par. $57' 28''$, and \odot alt 68° : find the log. difference.

Log. Diff.	6.299046	diff. 1° alt.	diff. $1'$ par.
p. p. for $10'$ of \odot alt.	102½	128	39
p. p. for $28''$ of par.*	20½		
\odot 's correction	18		
<hr/>			
Log. Difference required	6.299182		

Ex. 2. \odot alt. $32^\circ 0'$, hor. par. $55' 25''$, a star's alt. 12° : find the log. difference.

Log. Diff.	6.297336	104	71
diff 1° alt.	104		
p. p. for $25''$ of par.*	39		
star's correction	27		
<hr/>			
Log. Difference required	6.297506		

Ex. 3. \odot alt. $25^\circ 42'$, hor. par. $56' 0''$, \star 's alt. 40° : find the log. difference.

Log. Diff.	6.298031	114	58
p. p. for $42'$ of \odot alt.	34		
diff. $1'$ par.	58		
\star correction	30		
<hr/>			
Log. Difference required	6.298153		

Rule for clearing Lunar Distance.

- (1) Under the difference of apparent altitudes (both to the nearest minute), write the apparent distance, omitting the seconds, to be added afterwards; and take their sum and difference.
- (2) Add together the half log. haversines of the sum and difference, and the logarithmic difference (see the preceding problem), and the sum is the logarithm of a number.
- (3) To the number, add the nat. versine of the difference of true altitudes, and the sum is the nat. versine of an arc, which, on being increased by the "seconds" omitted, becomes the true distance.

* The "diff. $1'$ par.*" is found in the last column but one, to the right.

Note.—The difference of true altitudes may be found thus:—add together the moon's app. alt. (to the nearest minute) and the corrections of alts. of both objects, and the difference between the sum and the sun's or star's app. alt. is the difference of true altitudes.

Tables Cc, Dd, p. 385.—These tables are for the correction of the log. difference in the case of a planet, and for exceptional conditions of the thermometer and barometer. They are easily understood by inspection.

Example of Lunar worked by means of the Log. Difference.

☾ app. alt.	. . .	32° 49'	. . .	Hor. par.	. . .	54' 20"
☉ "	. . .	37 23				
	Diff.	. . .	4 34			
App. dist.	. . .	106 28	27"			
	Sum	. . .	111 2	. . .	$\frac{1}{2}$ log. hav.	4.916081
	Diff.	. . .	101 54	. . .	$\frac{1}{2}$ log. hav.	4.890195
					Log. difference	6.297407
☾ diff. 1° = 103,	par. diff. 1' = 71	. . .				84*
pp. for 49' = 19				Log.	. . .	6.103767
20" = 47						
☉ corr. = 18						
				No.	. . .	1269890
Diff. true alts.	. . .	3° 48'	47"	Vers.	. . .	2198
						16
				Vers.	. . .	1272104
Seconds omitted		105° 47'	22"			
			27			
True dist.	. . .	105 47	49			

NOTE.—It may be often convenient to use the apparent distance to the nearest *even* minute, observing to subtract the *seconds* at the conclusion, if taken in *excess*.

For instance—let the app. distance 60° 53' 50" be given; the seaman would use 60° 54', and at the conclusion of his work *subtract* 10", the *excess*, from the computed distance, to get the true distance.

Table (a). Correction of ☉'s Altitude (involving Dip, Refraction, Semidiameter, and Parallax).

Obs. Alt.	Add the Correction to the Altitude of the Lower Limb.																
	Height of the Eye in Feet.																
	6	8	10	12	13	14	15	16	17	18	20	22	24	26	28	30	32
5 0	3.8	3.4	3.1	2.8	2.6	2.5	2.3	2.2	2.1	2.0	1.8	1.6	1.4	1.2	1.0	0.8	0.6
10	4.0	3.7	3.3	3.1	2.9	2.8	2.6	2.5	2.4	2.3	2.1	1.8	1.6	1.5	1.3	1.1	0.9
20	4.3	3.9	3.6	3.3	3.2	3.0	2.9	2.8	2.7	2.5	2.3	2.1	1.9	1.7	1.5	1.3	1.1
30	4.5	4.2	3.9	3.6	3.4	3.3	3.1	3.0	2.9	2.8	2.6	2.4	2.2	2.0	1.8	1.6	1.4
40	4.8	4.4	4.1	3.8	3.7	3.5	3.4	3.3	3.2	3.0	2.9	2.6	2.4	2.2	2.0	1.8	1.7
50	5.0	4.6	4.3	4.0	3.9	3.7	3.6	3.5	3.4	3.3	3.0	2.8	2.6	2.4	2.2	2.0	1.9
6 0	5.2	4.9	4.5	4.2	4.1	4.0	3.8	3.7	3.6	3.5	3.3	3.0	2.8	2.6	2.4	2.2	2.1
10	5.4	5.1	4.7	4.4	4.3	4.2	4.0	3.9	3.8	3.7	3.5	3.2	3.0	2.8	2.7	2.5	2.3
20	5.6	5.2	4.9	4.6	4.5	4.3	4.2	4.1	4.0	3.9	3.7	3.5	3.2	3.0	2.8	2.7	2.5
30	5.8	5.4	5.1	4.8	4.7	4.5	4.4	4.3	4.2	4.0	3.8	3.6	3.4	3.2	3.0	2.9	2.7
40	5.9	5.6	5.3	5.0	4.9	4.7	4.6	4.5	4.3	4.2	4.0	3.9	3.6	3.4	3.2	3.0	2.9
50	6.1	5.8	5.5	5.2	5.0	4.9	4.8	4.6	4.5	4.4	4.2	4.0	3.8	3.6	3.4	3.2	3.0
7 0	6.3	5.9	5.6	5.3	5.2	5.1	4.9	4.8	4.7	4.6	4.3	4.2	3.9	3.7	3.6	3.4	3.2
20	6.6	6.2	5.9	5.6	5.4	5.3	5.2	5.1	4.9	4.8	4.6	4.4	4.2	4.0	3.8	3.6	3.5
40	6.9	6.5	6.2	5.9	5.7	5.6	5.5	5.3	5.2	5.1	4.9	4.7	4.4	4.2	4.1	3.9	3.8
8 0	7.1	6.8	6.4	6.1	6.0	5.9	5.7	5.6	5.5	5.4	5.1	4.9	4.7	4.5	4.3	4.1	4.0
20	7.4	7.0	6.7	6.4	6.3	6.1	6.0	5.8	5.7	5.6	5.4	5.1	4.9	4.7	4.6	4.4	4.3
40	7.6	7.2	6.9	6.6	6.5	6.3	6.2	6.1	5.9	5.8	5.6	5.4	5.2	5.0	4.8	4.6	4.5
9 0	7.8	7.4	7.1	6.8	6.7	6.5	6.4	6.3	6.2	6.0	5.8	5.6	5.4	5.2	5.0	4.8	4.7
20	8.0	7.6	7.3	7.0	6.9	6.7	6.6	6.5	6.4	6.2	6.0	5.8	5.6	5.4	5.2	5.0	4.9
40	8.2	7.8	7.5	7.2	7.1	6.9	6.8	6.7	6.6	6.4	6.2	6.0	5.8	5.6	5.4	5.2	5.1
10 0	8.4	8.0	7.7	7.4	7.3	7.1	7.0	6.9	6.7	6.6	6.4	6.2	6.0	5.8	5.6	5.4	5.3
11 0	8.6	8.3	7.9	7.6	7.5	7.3	7.2	7.1	7.0	6.9	6.6	6.4	6.2	6.0	5.8	5.6	5.5
11 30	8.9	8.5	8.2	7.9	7.7	7.6	7.5	7.3	7.2	7.1	6.8	6.6	6.4	6.2	6.1	5.9	5.7
12 0	9.1	8.7	8.4	8.1	7.9	7.8	7.7	7.5	7.4	7.3	7.1	6.8	6.6	6.4	6.3	6.1	5.9
13	9.3	8.9	8.6	8.2	8.1	8.0	7.9	7.7	7.6	7.5	7.3	7.0	6.8	6.6	6.5	6.3	6.2
14	9.6	9.2	8.9	8.6	8.5	8.3	8.2	8.1	7.9	7.8	7.6	7.4	7.2	7.0	6.8	6.6	6.5
15	9.9	9.5	9.2	8.9	8.8	8.6	8.5	8.4	8.2	8.1	7.9	7.7	7.5	7.3	7.1	6.9	6.8
16	10.2	9.8	9.5	9.2	9.0	8.9	8.8	8.6	8.5	8.4	8.2	7.9	7.7	7.5	7.4	7.2	7.0
17	10.4	10.0	9.7	9.4	9.2	9.1	9.0	8.9	8.7	8.6	8.4	8.2	8.0	7.8	7.6	7.4	7.2
18	10.6	10.2	9.9	9.6	9.4	9.3	9.2	9.1	8.9	8.8	8.6	8.4	8.2	8.0	7.8	7.6	7.4
19	10.8	10.4	10.1	9.8	9.6	9.5	9.4	9.2	9.1	9.0	8.8	8.6	8.4	8.2	8.0	7.8	7.6
20	10.9	10.6	10.2	9.9	9.8	9.7	9.5	9.4	9.3	9.2	8.9	8.7	8.5	8.3	8.1	8.0	7.8
22	11.1	10.7	10.4	10.1	9.9	9.8	9.7	9.6	9.4	9.3	9.1	8.9	8.7	8.5	8.3	8.1	7.9
24	11.3	11.0	10.6	10.3	10.2	10.1	9.9	9.8	9.7	9.6	9.4	9.1	8.9	8.7	8.5	8.4	8.2
26	11.6	11.2	10.9	10.6	10.4	10.3	10.2	10.1	9.9	9.8	9.6	9.4	9.1	9.0	8.8	8.6	8.4
28	11.7	11.3	11.0	10.7	10.6	10.5	10.3	10.2	10.1	10.0	9.8	9.5	9.3	9.1	8.9	8.8	8.6
30	11.9	11.5	11.2	10.9	10.8	10.6	10.5	10.4	10.3	10.2	9.9	9.7	9.5	9.3	9.1	8.9	8.7
32	12.0	11.7	11.3	11.0	10.9	10.8	10.6	10.5	10.4	10.3	10.1	9.8	9.6	9.4	9.3	9.1	8.9
34	12.3	11.9	11.6	11.3	11.1	11.0	10.9	10.7	10.6	10.5	10.3	10.1	9.9	9.7	9.5	9.3	9.1
36	12.5	12.1	11.8	11.5	11.3	11.2	11.1	10.9	10.8	10.7	10.5	10.3	10.1	9.9	9.7	9.5	9.3
38	12.6	12.3	11.9	11.6	11.5	11.4	11.2	11.1	11.0	10.9	10.6	10.4	10.2	10.0	9.8	9.7	9.4
40	12.8	12.4	12.1	11.8	11.6	11.5	11.4	11.2	11.1	11.0	10.8	10.6	10.4	10.2	10.0	9.8	9.6
42	12.9	12.5	12.2	11.9	11.7	11.6	11.5	11.4	11.2	11.1	10.9	10.7	10.5	10.3	10.1	9.9	9.7
44	13.0	12.6	12.3	12.0	11.9	11.7	11.6	11.5	11.4	11.2	11.0	10.8	10.6	10.4	10.2	10.0	9.8
46	13.1	12.7	12.4	12.1	12.0	11.8	11.7	11.6	11.5	11.3	11.1	10.9	10.7	10.5	10.3	10.1	9.9
48	13.3	12.9	12.6	12.3	12.2	12.0	11.9	11.8	11.7	11.5	11.3	11.1	10.9	10.7	10.5	10.3	10.1
50	13.4	13.1	12.8	12.5	12.3	12.2	12.1	11.9	11.8	11.7	11.5	11.3	11.0	10.9	10.7	10.5	10.3
52	13.5	13.2	12.9	12.6	12.5	12.3	12.2	12.1	12.0	11.8	11.6	11.4	11.2	11.0	10.8	10.6	10.4
Month.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.					
1st day . .	+0.3	+0.2	+0.2	-0.0	-0.1	-0.2	-0.2	-0.2	-0.1	+0.0	+0.1	+0.2					
16th day . .	+0.3	+0.2	+0.1	-0.1	-0.2	-0.2	-0.2	-0.2	-0.1	+0.1	+0.2	+0.3					

* When the upper limb of the Sun has been observed, proceed as above, and deduct 33'.

(b)

Parallax in Altitude for Planets.

[illegible]

(c)

Correction of A. for Planet in clearing Distance.

App. Alt.	Parallax in Altitude.									
	0	2	4	8	12	16	20	24	28	32
	+	+	+	+	+	+	+	+	+	+
3	8.0	8.0	8.1	8.2	8.3	8.4	8.6	8.7	8.8	8.9
4	5.4	5.5	5.6	5.7	5.9	6.0	6.2	6.3	6.5	6.7
5	3.8	3.9	4.0	4.1	4.3	4.5	4.7	4.9	5.1	5.3
6	2.8	2.9	3.0	3.2	3.5	3.7	3.9	4.2	4.4	4.7
7	2.1	2.2	2.4	2.6	2.9	3.2	3.5	3.7	4.0	4.3
8	1.7	1.8	2.0	2.3	2.6	2.9	3.3	3.6	3.9	4.2
9	1.3	1.5	1.7	2.0	2.4	2.8	3.1	3.5	3.8	4.2
10	1.1	1.3	1.5	1.9	2.3	2.7	3.1	3.5	3.9	4.3
20	0.0	0.5	0.9	1.8	2.7	3.5	4.3	5.1	6.0	6.8
30	0.0	0.8	1.5	2.8	4.1	5.5	6.8	8.1	9.4	10.7
40	0.0	0.1	2.0	3.9	5.9	7.7	9.7	11.6	13.5	
50	0.0	1.1	2.5	5.2	8.0	10.7	13.4	16.1		
60	0.0	1.5	3.5	7.4	11.4	15.3	19.3			
70	0.0	3.0	6.5	12.8	19.0					
75	0.0	4.4	8.6	17.2						
80	0.0	6.6	13.1	26.0						
85	0.0	13.4	26.0							
88	0.0	33.2	65.8							

Name of Point.		Points	In Degrees	Log. Sine.	Name of Point. (d)	
NORTH.					SOUTH.	
N. $\frac{1}{2}$ E.	N. $\frac{1}{2}$ W.	1	3 48 43	9.890786	S. $\frac{1}{2}$ E.	S. $\frac{1}{2}$ W.
N. $\frac{1}{4}$ E.	N. $\frac{1}{4}$ W.	1	5 37 30	9.901302	S. $\frac{1}{4}$ E.	S. $\frac{1}{4}$ W.
N. $\frac{1}{8}$ E.	N. $\frac{1}{8}$ W.	1	8 26 15	9.186520	S. $\frac{1}{8}$ E.	S. $\frac{1}{8}$ W.
N. by E.	N. by W.	1	11 15 0	9.290236	S. by E.	S. by W.
N. by E. $\frac{1}{4}$ E.	N. by W. $\frac{1}{4}$ W.	1	14 3 45	9.385571	S. by E. $\frac{1}{4}$ E.	S. by W. $\frac{1}{4}$ W.
N. by E. $\frac{1}{2}$ E.	N. by W. $\frac{1}{2}$ W.	1	16 52 30	9.462624	S. by E. $\frac{1}{2}$ E.	S. by W. $\frac{1}{2}$ W.
N. by E. $\frac{3}{4}$ E.	N. by W. $\frac{3}{4}$ W.	1	19 41 15	9.527488	S. by E. $\frac{3}{4}$ E.	S. by W. $\frac{3}{4}$ W.
N.N.E.	N.N.W.	2	22 30 0	9.582840	S.S.E.	S.S.W.
N.N.E. $\frac{1}{4}$ E.	N.N.W. $\frac{1}{4}$ W.	2	25 18 45	9.630992	S.S.E. $\frac{1}{4}$ E.	S.S.W. $\frac{1}{4}$ W.
N.N.E. $\frac{1}{2}$ E.	N.N.W. $\frac{1}{2}$ W.	2	28 7 30	9.673387	S.S.E. $\frac{1}{2}$ E.	S.S.W. $\frac{1}{2}$ W.
N.N.E. $\frac{3}{4}$ E.	N.N.W. $\frac{3}{4}$ W.	2	30 50 15	9.711050	S.S.E. $\frac{3}{4}$ E.	S.S.W. $\frac{3}{4}$ W.
N.E. by N.	N.W. by N.	3	33 45 0	9.744739	S.E. by S.	S.W. by S.
N.E. by N. $\frac{1}{4}$ E.	N.W. by N. $\frac{1}{4}$ W.	3	36 33 45	9.775027	S.E. by S. $\frac{1}{4}$ E.	S.W. by S. $\frac{1}{4}$ W.
N.E. by N. $\frac{1}{2}$ E.	N.W. by N. $\frac{1}{2}$ W.	3	39 22 30	9.802359	S.E. by S. $\frac{1}{2}$ E.	S.W. by S. $\frac{1}{2}$ W.
N.E. by N. $\frac{3}{4}$ E.	N.W. by N. $\frac{3}{4}$ W.	3	42 11 15	9.827084	S.E. by S. $\frac{3}{4}$ E.	S.W. by S. $\frac{3}{4}$ W.
N.E.	N.W.	4	45 0 0	9.849485	S.E.	S.W.
N.E. $\frac{1}{4}$ E.	N.W. $\frac{1}{4}$ W.	4	47 48 45	9.869790	S.E. $\frac{1}{4}$ E.	S.W. $\frac{1}{4}$ W.
N.E. $\frac{1}{2}$ E.	N.W. $\frac{1}{2}$ W.	4	50 37 30	9.888185	S.E. $\frac{1}{2}$ E.	S.W. $\frac{1}{2}$ W.
N.E. $\frac{3}{4}$ E.	N.W. $\frac{3}{4}$ W.	4	53 26 15	9.904828	S.E. $\frac{3}{4}$ E.	S.W. $\frac{3}{4}$ W.
N.E. by E.	N.W. by W.	5	56 15 0	9.919846	S.E. by E.	S.W. by W.
N.E. by E. $\frac{1}{4}$ E.	N.W. by W. $\frac{1}{4}$ W.	5	59 3 45	9.933350	S.E. by E. $\frac{1}{4}$ E.	S.W. by W. $\frac{1}{4}$ W.
N.E. by E. $\frac{1}{2}$ E.	N.W. by W. $\frac{1}{2}$ W.	5	61 52 30	9.945430	S.E. by E. $\frac{1}{2}$ E.	S.W. by W. $\frac{1}{2}$ W.
N.E. by E. $\frac{3}{4}$ E.	N.W. by W. $\frac{3}{4}$ W.	5	64 41 15	9.956163	S.E. by E. $\frac{3}{4}$ E.	S.W. by W. $\frac{3}{4}$ W.
E.N.E.	W.N.W.	6	67 30 0	9.965616	E.S.E.	W.S.W.
E. by N. $\frac{1}{4}$ N.	W. by N. $\frac{1}{4}$ N.	6	70 18 45	9.973841	E. by S. $\frac{1}{4}$ S.	W. by S. $\frac{1}{4}$ S.
E. by N. $\frac{1}{2}$ N.	W. by N. $\frac{1}{2}$ N.	6	73 7 30	9.980885	E. by S. $\frac{1}{2}$ S.	W. by S. $\frac{1}{2}$ S.
E. by N. $\frac{3}{4}$ N.	W. by N. $\frac{3}{4}$ N.	6	75 56 15	9.986786	E. by S. $\frac{3}{4}$ S.	W. by S. $\frac{3}{4}$ S.
E. by N.	W. by N.	7	78 45 0	9.991874	E. by S.	W. by S.
E. $\frac{1}{4}$ N.	W. $\frac{1}{4}$ N.	7	81 33 45	9.995274	E. $\frac{1}{4}$ S.	W. $\frac{1}{4}$ S.
E. $\frac{1}{2}$ N.	W. $\frac{1}{2}$ N.	7	84 22 30	9.997904	E. $\frac{1}{2}$ S.	W. $\frac{1}{2}$ S.
E. $\frac{3}{4}$ N.	W. $\frac{3}{4}$ N.	7	87 11 15	9.999477	E. $\frac{3}{4}$ S.	W. $\frac{3}{4}$ S.

(e) Dip of the Sea Horizon.

Dip of a Shore Horizon. (f)

Height of eye.	Dip.	Height of eye.	Dip.	Height of eye.	Dip.	Height of eye.	Dip.	Height of eye.	Dip.	Distance of the shore.	Height of the eye above the Sea in feet.
ft.	"	ft.	"	ft.	"	ft.	"	ft.	"		
1	0 50	15	3 49	20	5 18	50	7 34	110	10 19	5	10
2	1 24	30	5 56	30	6 24	62	7 45	120	10 47	11	22
3	1 42	44	7 4	40	7 39	85	8 56	130	11 14	17	34
4	1 58	58	8 11	50	8 34	100	9 7	140	11 39	22	45
5	2 12	72	8 17	60	9 39	115	9 18	150	12 3	28	56
6	2 25	86	8 24	70	10 44	130	9 29	160	12 27	34	68
7	2 36	100	8 31	80	11 49	145	9 38	170	12 50	40	80
8	2 47	114	8 37	90	12 4	160	9 48	180	13 12	46	92
9	2 57	128	8 43	100	12 18	175	9 58	190	13 33	52	104
10	3 7	142	8 49	110	13 32	190	10 8	200	13 55	58	116
11	3 16	156	8 55	120	14 45	205	10 17	210	14 16	64	128
12	3 25	170	9 1	130	15 58	220	10 26	220	14 36	70	140
13	3 33	184	9 7	140	17 10	235	10 36	230	14 56	76	152
14	3 41	198	9 13	150	18 22	250	10 45	240	15 15	82	164

Augmentation of the Moon's Hor. (g) Semidiameter.								Reduction of Hor. Par., and Lat. of Place, for Figure of Earth; both subtractive. (h)							
App. Alt.	14 40	15 0	15 20	15 40	16 0	16 20	16 40	Lat.	54'	56'	58'	60'	62'	Red. of Lat.	
0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0	0.1	0.1	0.1	0.1	0.1	2 16	
2	1.5	1.6	1.7	1.8	1.9	2.0	2.0	12	0.4	0.4	0.4	0.5	0.5	4 24	
4	2.0	2.1	2.2	2.3	2.4	2.5	2.6	24	0.9	1.0	1.0	1.1	1.1	6 22	
6	2.6	2.7	2.8	2.9	3.0	3.1	3.3	36	1.6	1.7	1.8	1.9	1.9	8 3	
8	3.2	3.3	3.3	3.4	3.6	3.7	3.9	48	2.5	2.6	2.7	2.8	2.9	9 23	
10	3.5	3.6	3.8	3.9	4.1	4.3	4.5	60	3.5	3.6	3.7	3.9	4.0	10 19	
12	3.9	4.1	4.3	4.5	4.7	4.9	5.1	72	4.5	4.7	4.9	5.1	5.2	10 48	
14	4.4	4.6	4.8	5.0	5.2	5.4	5.6	84	5.6	5.8	6.0	6.2	6.4	10 48	
16	4.8	5.1	5.3	5.6	5.8	6.0	6.2	96	6.6	6.9	7.1	7.4	7.6	10 20	
18	5.2	5.5	5.8	6.1	6.3	6.6	6.8	108	7.6	7.9	8.2	8.5	8.7	9 25	
20	5.7	6.0	6.3	6.6	6.8	7.1	7.4	120	8.5	8.8	9.1	9.4	9.7	8 5	
22	6.1	6.4	6.8	7.1	7.4	7.7	8.0	132	9.2	9.5	9.9	10.2	10.6	6 24	
24	6.6	6.9	7.2	7.6	7.9	8.2	8.5	144	9.7	10.1	10.5	10.8	11.2	4 26	
26	7.1	7.4	7.7	8.0	8.4	8.7	9.0	156	10.1	10.4	10.8	11.2	11.6	2 16	
28	7.5	7.8	8.2	8.5	8.9	9.2	9.6	168	10.2	10.6	11.0	11.3	11.7	0 0	
30	7.8	8.2	8.6	9.0	9.3	9.7	10.1								
32	8.2	8.6	9.0	9.4	9.9	10.2	10.6								
34	8.6	9.0	9.4	9.9	10.3	10.7	11.1								
36	9.0	9.4	9.8	10.3	10.7	11.1	11.6								
38	9.4	9.8	10.2	10.7	11.2	11.6	12.1								
40	9.8	10.2	10.6	11.1	11.6	12.0	12.6								
42	10.0	10.5	11.0	11.5	12.0	12.5	13.0								
44	10.4	10.9	11.4	11.9	12.4	12.9	13.4								
46	10.7	11.2	11.7	12.2	12.8	13.3	13.8								
48	11.0	11.5	12.0	12.6	13.1	13.7	14.2								
50	11.3	11.8	12.4	12.9	13.5	14.1	14.6								
52	11.6	12.1	12.7	13.2	13.8	14.4	14.9								
54	11.8	12.4	12.9	13.6	14.2	14.7	15.3								
56	12.1	12.7	13.2	13.8	14.5	15.0	15.6								
58	12.3	12.9	13.5	14.1	14.7	15.3	15.9								
60	12.5	13.1	13.7	14.3	15.0	15.6	16.2								
62	12.8	13.4	13.9	14.6	15.2	15.8	16.5								
64	12.9	13.5	14.2	14.8	15.4	16.1	16.7								
66	13.1	13.7	14.4	15.0	15.7	16.3	16.9								
68	13.3	13.9	14.5	15.2	15.8	16.5	17.2								
70	13.4	14.0	14.7	15.3	16.0	16.7	17.4								
72	13.5	14.1	14.8	15.5	16.2	16.8	17.5								
74	13.7	14.3	14.9	15.6	16.3	16.9	17.6								
76	13.8	14.4	15.0	15.7	16.4	17.1	17.8								
78	13.8	14.4	15.1	15.8	16.5	17.2	17.8								
80	13.9	14.5	15.2	15.9	16.6	17.3	17.9								
82	13.9	14.5	15.2	15.9	16.6	17.3	18.0								
84	14.0	14.6	15.3	15.9	16.6	17.3	18.0								
86	14.0	14.6	15.3	15.9	16.6	17.3	18.0								
88	14.0	14.6	15.3	15.9	16.6	17.3	18.0								
90	14.0	14.6	15.3	16.0	16.7	17.3	18.0								

Reduction of Semid. on account of Refraction. (i)															
		Inclination to the Horizon.													
Alt.															
	0	12	24	36	48	54	60	66	72	78	84	90			
0	0	1	4	9	14	16	19	21	23	24	25	25			
2	0	1	3	7	10	12	14	16	17	18	19	19			
4	0	1	2	5	8	9	11	12	13	14	14	14			
6	0	0	2	4	6	7	8	9	10	11	11	11			
8	0	0	1	3	5	6	7	8	8	9	9	9			
10	0	0	1	3	4	5	6	6	7	7	8	8			
12	0	0	1	2	3	4	5	5	6	6	6	6			
14	0	0	1	1	2	3	3	3	4	4	4	4			
16	0	0	1	1	2	2	2	3	3	3	3	3			
20	0	0	0	1	1	1	2	2	2	2	2	2			
30	0	0	0	0	1	1	1	1	1	1	1	1			
50	0	0	0	0	0	0	0	0	0	0	0	0			
90	0	0	0	0	0	0	0	0	0	0	0	0			

Dir.	Correction in finding MOON'S Meridian Passage.																																	(k)																											
Moon's Mer. Pass.	Long (W. add) — (E. Subtract.)																																																												
	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120	125	130	135	140	145	150	155	160																													
40	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	10	11	11	12	12	13	13	14	14	15	15	16	16	17	17	18	18	19	19	20																						
44	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	10	11	11	12	12	13	13	14	14	15	15	16	16	17	17	18	18	19	20	20	21	21	22																			
48	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	11	11	12	12	13	13	14	14	15	15	16	16	17	17	18	18	19	19	20	21	21	22	22	23	23	24																
52	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	11	11	12	12	13	13	14	14	15	15	16	16	17	17	18	18	19	19	20	21	21	22	22	23	23	24	24	25	25	26												
56	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	11	11	12	12	13	13	14	14	15	15	16	16	17	17	18	18	19	19	20	21	21	22	22	23	23	24	24	25	25	26	26	27	27	28								
60	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	11	11	12	12	13	13	14	14	15	15	16	16	17	17	18	18	19	20	20	21	21	22	22	23	23	24	24	25	25	26	26	27	27	28	28	29	29	30				
64	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	11	11	12	12	13	13	14	14	15	15	16	16	17	17	18	18	19	20	20	21	21	22	22	23	23	24	24	25	25	26	26	27	27	28	28	29	29	30	31	31	32	
68	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	11	11	12	12	13	13	14	14	15	15	16	16	17	17	18	18	19	20	20	21	21	22	22	23	23	24	24	25	25	26	26	27	27	28	28	29	29	30	31	31	32	33

Correction in finding Time of High Water.											(1)
Time of Moon's Mer. Passage.		Moon's Semidiameter.									
		14 30	14 45	15 0	15 15	15 30	15 45	16 0	16 15	16 30	
h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	
0 0	12 0	-0 4	-0 3	-0 2	-0 1	-0 0	+0 1	+0 2	+0 3	+0 5	
0 20	12 20	-0 8	-0 8	-0 7	-0 6	-0 5	-0 4	-0 3	-0 2	-0 1	
0 40	12 40	-0 12	-0 12	-0 11	-0 11	-0 10	-0 10	-0 9	-0 9	-0 8	
1 0	13 0	-0 17	-0 17	-0 17	-0 16	-0 16	-0 16	-0 15	-0 15	-0 15	
1 20	13 20	-0 22	-0 22	-0 22	-0 22	-0 22	-0 22	-0 22	-0 23	-0 23	
1 40	13 40	-0 27	-0 27	-0 27	-0 28	-0 28	-0 28	-0 29	-0 29	-0 29	
2 0	14 0	-0 31	-0 31	-0 32	-0 32	-0 33	-0 33	-0 34	-0 35	-0 36	
2 20	14 20	-0 36	-0 36	-0 37	-0 38	-0 39	-0 40	-0 41	-0 42	-0 43	
2 40	14 40	-0 40	-0 41	-0 42	-0 43	-0 44	-0 45	-0 46	-0 47	-0 49	
3 0	15 0	-0 44	-0 45	-0 47	-0 48	-0 49	-0 51	-0 52	-0 54	-0 56	
3 20	15 20	-0 48	-0 49	-0 51	-0 52	-0 53	-0 55	-0 57	-0 59	-1 1	
3 40	15 40	-0 51	-0 53	-0 55	-0 57	-0 58	-1 0	-1 2	-1 4	-1 7	
4 0	16 0	-0 55	-0 57	-0 59	-1 0	-1 2	-1 5	-1 7	-1 10	-1 12	
4 20	16 20	-0 57	-0 59	-1 0	-1 2	-1 4	-1 6	-1 9	-1 12	-1 15	
4 40	16 40	-0 59	-1 1	-1 3	-1 5	-1 7	-1 9	-1 12	-1 15	-1 18	
5 0	17 0	-1 0	-1 2	-1 4	-1 6	-1 8	-1 10	-1 13	-1 16	-1 19	
5 20	17 20	-1 0	-1 2	-1 4	-1 6	-1 8	-1 11	-1 14	-1 17	-1 20	
5 40	17 40	-0 58	-1 0	-1 2	-1 4	-1 6	-1 8	-1 11	-1 13	-1 16	
6 0	18 0	-0 55	-0 56	-0 58	-1 0	-1 2	-1 4	-1 6	-1 9	-1 12	
6 20	18 20	-0 49	-0 50	-0 51	-0 52	-0 54	-0 56	-0 58	-1 0	-1 3	
6 40	18 40	-0 43	-0 44	-0 45	-0 46	-0 47	-0 48	-0 49	-0 51	-0 53	
6 50	18 50	-0 37	-0 37	-0 38	-0 39	-0 40	-0 41	-0 42	-0 43	-0 45	
7 0	19 0	-0 32	-0 32	-0 33	-0 33	-0 34	-0 34	-0 35	-0 36	-0 37	
7 10	19 10	-0 27	-0 27	-0 27	-0 27	-0 28	-0 28	-0 28	-0 29	-0 29	
7 20	19 20	-0 22	-0 22	-0 22	-0 22	-0 22	-0 22	-0 22	-0 23	-0 22	
7 30	19 30	-0 16	-0 16	-0 16	-0 16	-0 15	-0 15	-0 14	-0 14	-0 14	
7 40	19 40	-0 11	-0 11	-0 10	-0 10	-0 9	-0 9	-0 8	-0 7	-0 6	
7 50	19 50	-0 6	-0 6	-0 5	-0 4	-0 3	-0 2	-0 1	-0 0	+0 2	
8 0	20 0	-0 1	-0 0	+0 1	+0 2	+0 3	+0 4	+0 6	+0 7	+0 9	
8 20	20 20	+0 5	+0 6	+0 7	+0 9	+0 11	+0 13	+0 15	+0 17	+0 19	
8 40	20 40	+0 11	+0 12	+0 14	+0 16	+0 18	+0 20	+0 22	+0 25	+0 28	
9 0	21 0	+0 14	+0 16	+0 18	+0 20	+0 22	+0 24	+0 26	+0 29	+0 32	
9 20	21 20	+0 16	+0 18	+0 20	+0 22	+0 24	+0 27	+0 30	+0 33	+0 36	
10 0	22 0	+0 15	+0 17	+0 19	+0 21	+0 23	+0 25	+0 27	+0 30	+0 34	
10 20	22 20	+0 13	+0 15	+0 17	+0 19	+0 21	+0 23	+0 25	+0 28	+0 31	
10 40	22 40	+0 11	+0 13	+0 14	+0 16	+0 18	+0 20	+0 22	+0 25	+0 28	
11 0	23 0	+0 7	+0 8	+0 10	+0 12	+0 14	+0 16	+0 18	+0 20	+0 23	
11 20	23 20	+0 4	+0 5	+0 6	+0 7	+0 9	+0 11	+0 13	+0 15	+0 17	
11 40	23 40	+0 0	+0 1	+0 2	+0 3	+0 5	+0 7	+0 8	+0 10	+0 12	
12 0	24 0	-0 4	-0 3	-0 2	-0 1	-0 0	+0 1	+0 2	+0 3	+0 5	

(Ther. 50.)

(Bar. 30.)

Correction of the Sun's App. Alt. (*subtr.*)

☉

(m)

(or Refraction — Parallax.)

AA	Corr.	Diff.	AA	Corr.	AA	Corr.	AA	Corr.	AA	Corr.	AA	Corr.
—	—	for 10'	—	—	—	—	—	—	—	—	—	—
0 0	33 42	117	5 0	9 49	6 0	8 23	7 0	7 18	8 0	6 26	9 0	5 45
0 5	32 44	113	5 1	9 48	6 1	8 22	7 1	7 17	8 1	6 25	9 2	5 44
0 10	31 48	109	5 2	9 46	6 2	8 21	7 2	7 16	8 2	6 25	9 4	5 42
0 15	30 56	105	5 3	9 44	6 3	8 20	7 3	7 15	8 3	6 24	9 6	5 41
0 20	30 4	101	5 4	9 43	6 4	8 18	7 4	7 14	8 4	6 23	9 8	5 40
0 25	29 15	97	5 5	9 41	6 5	8 17	7 5	7 13	8 5	6 23	9 10	5 38
0 30	28 28	94	5 6	9 40	6 6	8 16	7 6	7 12	8 6	6 22	9 12	5 37
0 35	27 42	90	5 7	9 38	6 7	8 15	7 7	7 11	8 7	6 21	9 14	5 36
0 40	26 57	87	5 8	9 36	6 8	8 14	7 8	7 10	8 8	6 21	9 16	5 35
0 45	26 15	84	5 9	9 35	6 9	8 13	7 9	7 9	8 9	6 20	9 18	5 33
0 50	25 34	80	5 10	9 33	6 10	8 11	7 10	7 8	8 10	6 19	9 20	5 32
0 55	24 54	77	5 11	9 32	6 11	8 10	7 11	7 7	8 11	6 19	9 22	5 31
1 0	24 16	74	5 12	9 31	6 12	8 9	7 12	7 6	8 12	6 18	9 24	5 30
1 5	23 39	71	5 13	9 29	6 13	8 8	7 13	7 6	8 13	6 17	9 26	5 29
1 10	23 4	69	5 14	9 27	6 14	8 7	7 14	7 5	8 14	6 16	9 28	5 28
1 15	22 31	66	5 15	9 26	6 15	8 6	7 15	7 4	8 15	6 16	9 30	5 27
1 20	21 59	63	5 16	9 24	6 16	8 5	7 16	7 3	8 16	6 15	9 32	5 26
1 25	21 28	61	5 17	9 23	6 17	8 4	7 17	7 2	8 17	6 14	9 34	5 25
1 30	20 58	59	5 18	9 21	6 18	8 2	7 18	7 1	8 18	6 14	9 36	5 24
1 35	20 29	57	5 19	9 20	6 19	8 1	7 19	7 0	8 19	6 13	9 38	5 22
1 40	20 1	55	5 20	9 18	6 20	8 0	7 20	6 59	8 20	6 12	9 40	5 21
1 45	19 34	53	5 21	9 17	6 21	7 59	7 21	6 58	8 21	6 12	9 42	5 20
1 50	19 8	51	5 22	9 15	6 22	7 58	7 22	6 57	8 22	6 11	9 44	5 19
1 55	18 43	49	5 23	9 13	6 23	7 57	7 23	6 57	8 23	6 10	9 46	5 18
2 0	18 20	48	5 24	9 12	6 24	7 56	7 24	6 56	8 24	6 9	9 48	5 17
2 5	17 56	46	5 25	9 10	6 25	7 55	7 25	6 55	8 25	6 9	9 50	5 16
2 10	17 34	44	5 26	9 9	6 26	7 54	7 26	6 54	8 26	6 8	9 52	5 15
2 15	17 12	43	5 27	9 7	6 27	7 53	7 27	6 53	8 27	6 7	9 54	5 14
2 20	16 51	41	5 28	9 5	6 28	7 51	7 28	6 52	8 28	6 7	9 56	5 13
2 25	16 31	40	5 29	9 4	6 29	7 50	7 29	6 51	8 29	6 6	9 58	5 12
2 30	16 12	39	5 30	9 2	6 30	7 49	7 30	6 50	8 30	6 5	10 0	5 11
2 35	15 53	37	5 31	9 1	6 31	7 48	7 31	6 49	8 31	6 5	10 2	5 10
2 40	15 34	36	5 32	9 0	6 32	7 47	7 32	6 49	8 32	6 4	10 4	5 9
2 45	15 16	35	5 33	8 58	6 33	7 46	7 33	6 48	8 33	6 3	10 6	5 8
2 50	14 59	34	5 34	8 57	6 34	7 45	7 34	6 47	8 34	6 2	10 8	5 7
2 55	14 42	33	5 35	8 56	6 35	7 44	7 35	6 46	8 35	6 2	10 10	5 6
3 0	14 26	32	5 36	8 54	6 36	7 43	7 36	6 45	8 36	6 1	10 12	5 5
3 5	14 10	31	5 37	8 53	6 37	7 42	7 37	6 45	8 37	6 0	10 14	5 4
3 10	13 55	30	5 38	8 52	6 38	7 40	7 38	6 44	8 38	6 0	10 16	5 3
3 15	13 41	29	5 39	8 51	6 39	7 39	7 39	6 43	8 39	5 59	10 18	5 2
3 20	13 26	28	5 40	8 49	6 40	7 38	7 40	6 42	8 40	5 58	10 20	5 1
3 25	13 12	27	5 41	8 48	6 41	7 37	7 41	6 41	8 41	5 58	10 22	5 0
3 30	12 58	27	5 42	8 47	6 42	7 36	7 42	6 41	8 42	5 57	10 24	4 59
3 35	12 44	26	5 43	8 45	6 43	7 35	7 43	6 40	8 43	5 56	10 26	4 58
3 40	12 32	25	5 44	8 44	6 44	7 34	7 44	6 39	8 44	5 55	10 28	4 57
3 45	12 19	24	5 45	8 43	6 45	7 33	7 45	6 38	8 45	5 55	10 30	4 56
3 50	12 7	24	5 46	8 41	6 46	7 32	7 46	6 37	8 46	5 54	10 32	4 55
3 55	11 54	23	5 47	8 40	6 47	7 31	7 47	6 37	8 47	5 53	10 34	4 54
4 0	11 43	22	5 48	8 39	6 48	7 30	7 48	6 36	8 48	5 53	10 36	4 53
4 5	11 37	21	5 49	8 38	6 49	7 29	7 49	6 35	8 49	5 52	10 38	4 52
4 10	11 21	20	5 50	8 36	6 50	7 28	7 50	6 34	8 50	5 51	10 40	4 51
4 15	11 11	20	5 51	8 35	6 51	7 27	7 51	6 33	8 51	5 51	10 42	4 50
4 20	11 1	20	5 52	8 34	6 52	7 26	7 52	6 33	8 52	5 50	10 44	4 50
4 25	10 51	19	5 53	8 32	6 53	7 25	7 53	6 32	8 53	5 49	10 46	4 49
4 30	10 41	18	5 54	8 31	6 54	7 24	7 54	6 31	8 54	5 49	10 48	4 48
4 35	10 32	18	5 55	8 30	6 55	7 23	7 55	6 30	8 55	5 48	10 50	4 47
4 40	10 23	17	5 56	8 28	6 56	7 22	7 56	6 29	8 56	5 48	10 52	4 46
4 45	10 15	17	5 57	8 27	6 57	7 21	7 57	6 29	8 57	5 47	10 54	4 45
4 50	10 6	17	5 58	8 26	6 58	7 20	7 58	6 28	8 58	5 46	10 56	4 44
4 55	9 58	16	5 59	8 25	6 59	7 19	7 59	6 27	8 59	5 46	10 58	4 43

Correction of the Sun's App. Alt. (<i>subtr.</i>) (or Refraction — Parallax.)												(Ther. 50.) (Bar 30.)	(m)
AA	Corr.	AA	Corr.	AA	Corr.	AA	Corr.	AA	Corr.	AA	Corr.		
11 0	4 42	13 0	3 59	15 0	3 26	20 0	2 30	30 0	1 33	50 0	0 43		
11 2	4 42	13 2	3 58	15 5	3 25	20 10	2 29	30 20	1 32	50 30	0 42		
11 4	4 41	13 4	3 58	15 10	3 23	20 20	2 28	30 40	1 30	51 0	0 42		
11 6	4 40	13 6	3 57	15 15	3 22	20 30	2 26	31 0	1 29	51 30	0 41		
11 8	4 39	13 8	3 56	15 20	3 21	20 40	2 25	31 20	1 28	52 0	0 40		
11 10	4 38	13 10	3 56	15 25	3 20	20 50	2 23	31 40	1 27	52 30	0 39		
11 12	4 38	13 12	3 55	15 30	3 19	21 0	2 22	32 0	1 25	53 0	0 38		
11 14	4 37	13 14	3 55	15 35	3 18	21 10	2 21	32 20	1 24	53 30	0 38		
11 16	4 36	13 16	3 54	15 40	3 17	21 20	2 20	32 40	1 23	54 0	0 37		
11 18	4 35	13 18	3 53	15 45	3 15	21 30	2 19	33 0	1 22	54 30	0 36		
11 20	4 34	13 20	3 53	15 50	3 14	21 40	2 17	33 20	1 21	55 0	0 36		
11 22	4 34	13 22	3 52	15 55	3 13	21 50	2 16	33 40	1 20	55 30	0 35		
11 24	4 33	13 24	3 52	16 0	3 12	22 0	2 15	34 0	1 19	56 0	0 34		
11 26	4 32	13 26	3 51	16 5	3 11	22 10	2 14	34 20	1 18	56 30	0 33		
11 28	4 31	13 28	3 50	16 10	3 10	22 20	2 13	34 40	1 17	57 0	0 33		
11 30	4 30	13 30	3 50	16 15	3 9	22 30	2 12	35 0	1 16	57 30	0 32		
11 32	4 30	13 32	3 49	16 20	3 8	22 40	2 11	35 20	1 15	58 0	0 32		
11 34	4 29	13 34	3 49	16 25	3 7	22 50	2 9	35 40	1 14	58 30	0 31		
11 36	4 28	13 36	3 48	16 30	3 6	23 0	2 8	36 0	1 13	59 0	0 30		
11 38	4 27	13 38	3 48	16 35	3 5	23 10	2 7	36 20	1 12	59 30	0 30		
11 40	4 26	13 40	3 47	16 40	3 4	23 20	2 6	36 40	1 11	60 0	0 29		
11 42	4 26	13 42	3 46	16 45	3 3	23 30	2 5	37 0	1 10	60 30	0 28		
11 44	4 25	13 44	3 46	16 50	3 2	23 40	2 4	37 20	1 9	61 0	0 28		
11 46	4 24	13 46	3 45	16 55	3 1	23 50	2 3	37 40	1 8	61 30	0 27		
11 48	4 23	13 48	3 45	17 0	3 0	24 0	2 2	38 0	1 7	62 0	0 27		
11 50	4 22	13 50	3 44	17 5	2 59	24 10	2 1	38 20	1 7	62 30	0 26		
11 52	4 22	13 52	3 44	17 10	2 58	24 20	2 0	38 40	1 6	63 0	0 26		
11 54	4 21	13 54	3 43	17 15	2 57	24 30	1 59	39 0	1 5	63 30	0 25		
11 56	4 21	13 56	3 42	17 20	2 56	24 40	1 58	39 20	1 4	64 0	0 24		
11 58	4 20	13 58	3 42	17 25	2 55	24 50	1 57	39 40	1 3	64 30	0 24		
12 0	4 19	14 0	3 41	17 30	2 54	25 0	1 56	40 0	1 3	65 0	0 23		
12 2	4 19	14 2	3 41	17 35	2 54	25 10	1 55	40 20	1 2	65 30	0 23		
12 4	4 18	14 4	3 40	17 40	2 53	25 20	1 54	40 40	1 1	66 0	0 22		
12 6	4 17	14 6	3 40	17 45	2 52	25 30	1 54	41 0	1 0	66 30	0 22		
12 8	4 16	14 8	3 39	17 50	2 51	25 40	1 53	41 20	0 59	67 0	0 21		
12 10	4 16	14 10	3 39	17 55	2 50	25 50	1 52	41 40	0 59	67 30	0 21		
12 12	4 15	14 12	3 38	18 0	2 49	26 0	1 51	42 0	0 58	68 0	0 20		
12 14	4 14	14 14	3 38	18 5	2 48	26 10	1 50	42 20	0 57	69 0	0 19		
12 16	4 14	14 16	3 37	18 10	2 47	26 20	1 49	42 40	0 57	70 0	0 18		
12 18	4 13	14 18	3 36	18 15	2 47	26 30	1 48	43 0	0 56	71 0	0 17		
12 20	4 12	14 20	3 36	18 20	2 46	26 40	1 48	43 20	0 55	72 0	0 16		
12 22	4 11	14 22	3 35	18 25	2 45	26 50	1 47	43 40	0 55	73 0	0 15		
12 24	4 11	14 24	3 35	18 30	2 44	27 0	1 46	44 0	0 54	74 0	0 14		
12 26	4 10	14 26	3 34	18 35	2 43	27 10	1 45	44 20	0 53	75 0	0 13		
12 28	4 9	14 28	3 34	18 40	2 43	27 20	1 44	44 40	0 53	76 0	0 12		
12 30	4 9	14 30	3 33	18 45	2 42	27 30	1 44	45 0	0 52	77 0	0 11		
12 32	4 8	14 32	3 33	18 50	2 41	27 40	1 43	45 20	0 51	78 0	0 10		
12 34	4 7	14 34	3 32	18 55	2 40	27 50	1 42	45 40	0 51	79 0	0 9		
12 36	4 7	14 36	3 32	19 0	2 39	28 0	1 41	46 0	0 50	80 0	0 9		
12 38	4 6	14 38	3 31	19 5	2 39	28 10	1 41	46 20	0 49	81 0	0 8		
12 40	4 5	14 40	3 31	19 10	2 38	28 20	1 40	46 40	0 49	82 0	0 7		
12 42	4 5	14 42	3 30	19 15	2 37	28 30	1 39	47 0	0 48	83 0	0 6		
12 44	4 4	14 44	3 30	19 20	2 36	28 40	1 38	47 20	0 47	84 0	0 5		
12 46	4 3	14 46	3 29	19 25	2 36	28 50	1 38	47 40	0 47	85 0	0 4		
12 48	4 3	14 48	3 29	19 30	2 35	29 0	1 37	48 0	0 46	86 0	0 4		
12 50	4 2	14 50	3 28	19 35	2 34	29 10	1 36	48 20	0 46	87 0	0 3		
12 52	4 1	14 52	3 28	19 40	2 33	29 20	1 36	48 40	0 45	88 0	0 2		
12 54	4 1	14 54	3 27	19 45	2 33	29 30	1 35	49 0	0 45	89 0	0 1		
12 56	4 0	14 56	3 27	19 50	2 32	29 40	1 34	49 20	0 44	90 0	0 0		
12 58	3 59	14 58	3 26	19 55	2 31	29 50	1 33	49 40	0 44				

(Ther. 50.) (Bar. 30.)				Correction of a STAR's App. Alt. (<i>subtr.</i>) (or Refraction in Alt.)												*								
(n)																								
AA	Corr.	Diff.		AA	Corr.	AA	Corr.	AA	Corr.	AA	Corr.	AA	Corr.											
—				—			—			—			—											
for 10'																								
0	0	33	51	117	5	0	9	58	6	0	8	32	7	0	7	27	8	0	6	35	9	0	5	54
0	5	32	53	113	5	1	9	56	6	1	8	31	7	1	7	26	8	1	6	34	9	2	5	53
0	10	31	58	109	5	2	9	55	6	2	8	30	7	2	7	25	8	2	6	34	9	4	5	51
0	15	31	5	105	5	3	9	53	6	3	8	28	7	3	7	24	8	3	6	33	9	6	5	50
0	20	30	13	101	5	4	9	52	6	4	8	27	7	4	7	23	8	4	6	32	9	8	5	48
0	25	29	24	97	5	5	9	50	6	5	8	26	7	5	7	22	8	5	6	31	9	10	5	47
0	30	28	37	94	5	6	9	48	6	6	8	25	7	6	7	21	8	6	6	31	9	12	5	46
0	35	27	51	90	5	7	9	47	6	7	8	24	7	7	7	20	8	7	6	30	9	14	5	45
0	40	27	6	87	5	8	9	45	6	8	8	22	7	8	7	19	8	8	6	29	9	16	5	43
0	45	26	24	84	5	9	9	44	6	9	8	21	7	9	7	18	8	9	6	29	9	18	5	42
0	50	25	43	80	5	10	9	42	6	10	8	20	7	10	7	17	8	10	6	28	9	20	5	41
0	55	25	3	77	5	11	9	40	6	11	8	19	7	11	7	16	8	11	6	27	9	22	5	40
1	0	24	25	74	5	12	9	39	6	12	8	18	7	12	7	15	8	12	6	27	9	24	5	39
1	5	23	48	71	5	13	9	37	6	13	8	17	7	13	7	14	8	13	6	26	9	26	5	38
1	10	23	13	69	5	14	9	36	6	14	8	16	7	14	7	13	8	14	6	25	9	28	5	37
1	15	22	40	66	5	15	9	34	6	15	8	14	7	15	7	12	8	15	6	24	9	30	5	36
1	20	22	8	63	5	16	9	33	6	16	8	13	7	16	7	12	8	16	6	24	9	32	5	35
1	25	21	37	61	5	17	9	31	6	17	8	12	7	17	7	11	8	17	6	23	9	34	5	34
1	30	21	7	59	5	18	9	30	6	18	8	11	7	18	7	10	8	18	6	22	9	36	5	32
1	35	20	38	57	5	19	9	28	6	19	8	10	7	19	7	9	8	19	6	22	9	38	5	31
1	40	20	10	55	5	20	9	27	6	20	8	9	7	20	7	8	8	20	6	21	9	40	5	30
1	45	19	43	53	5	21	9	25	6	21	8	8	7	21	7	7	8	21	6	20	9	42	5	29
1	50	19	17	51	5	22	9	24	6	22	8	7	7	22	7	6	8	22	6	20	9	44	5	28
1	55	18	52	49	5	23	9	22	6	23	8	6	7	23	7	5	8	23	6	19	9	46	5	27
2	0	18	29	48	5	24	9	21	6	24	8	5	7	24	7	4	8	24	6	18	9	48	5	26
2	5	18	5	46	5	25	9	19	6	25	8	3	7	25	7	3	8	25	6	17	9	50	5	25
2	10	17	43	44	5	26	9	17	6	26	8	2	7	26	7	3	8	26	6	17	9	52	5	24
2	15	17	21	43	5	27	9	16	6	27	8	1	7	27	7	2	8	27	6	16	9	54	5	23
2	20	17	0	41	5	28	9	14	6	28	8	0	7	28	7	1	8	28	6	15	9	56	5	22
2	25	16	40	40	5	29	9	13	6	29	7	59	7	29	7	0	8	29	6	15	9	58	5	21
2	30	16	21	39	5	30	9	11	6	30	7	58	7	30	6	59	8	30	6	14	10	0	5	20
2	35	16	2	37	5	31	9	10	6	31	7	57	7	31	6	58	8	31	6	13	10	2	5	19
2	40	15	43	36	5	32	9	8	6	32	7	56	7	32	6	57	8	32	6	13	10	4	5	18
2	45	15	25	35	5	33	9	7	6	33	7	55	7	33	6	57	8	33	6	12	10	6	5	17
2	50	15	8	34	5	34	9	6	6	34	7	54	7	34	6	56	8	34	6	11	10	8	5	16
2	55	14	51	33	5	35	9	4	6	35	7	52	7	35	6	55	8	35	6	10	10	10	5	15
3	0	14	35	32	5	36	9	3	6	36	7	51	7	36	6	54	8	36	6	10	10	12	5	14
3	5	14	19	31	5	37	9	2	6	37	7	50	7	37	6	53	8	37	6	9	10	14	5	13
3	10	14	4	30	5	38	9	1	6	38	7	49	7	38	6	53	8	38	6	8	10	16	5	12
3	15	13	50	29	5	39	8	59	6	39	7	48	7	39	6	52	8	39	6	8	10	18	5	11
3	20	13	35	28	5	40	8	58	6	40	7	47	7	40	6	51	8	40	6	7	10	20	5	10
3	25	13	21	27	5	41	8	57	6	41	7	46	7	41	6	50	8	41	6	6	10	22	5	9
3	30	13	7	27	5	42	8	55	6	42	7	45	7	42	6	49	8	42	6	6	10	24	5	8
3	35	12	53	26	5	43	8	54	6	43	7	44	7	43	6	49	8	43	6	5	10	26	5	7
3	40	12	41	25	5	44	8	53	6	44	7	43	7	44	6	48	8	44	6	4	10	28	5	6
3	45	12	28	24	5	45	8	51	6	45	7	42	7	45	6	47	8	45	6	3	10	30	5	5
3	50	12	16	24	5	46	8	50	6	46	7	41	7	46	6	46	8	46	6	3	10	32	5	4
3	55	12	3	23	5	47	8	49	6	47	7	40	7	47	6	45	8	47	6	2	10	34	5	3
4	0	11	52	22	5	48	8	48	6	48	7	39	7	48	6	45	8	48	6	1	10	36	5	2
4	5	11	41	21	5	49	8	46	6	49	7	38	7	49	6	44	8	49	6	1	10	38	5	1
4	10	11	30	20	5	50	8	45	6	50	7	37	7	50	6	43	8	50	6	0	10	40	5	0
4	15	11	20	20	5	51	8	44	6	51	7	36	7	51	6	42	8	51	5	59	10	42	4	59
4	20	11	10	20	5	52	8	42	6	52	7	35	7	52	6	41	8	52	5	59	10	44	4	58
4	25	11	0	19	5	53	8	41	6	53	7	34	7	53	6	41	8	53	5	58	10	46	4	58
4	30	10	50	18	5	54	8	40	6	54	7	33	7	54	6	40	8	54	5	58	10	48	4	57
4	35	10	41	18	5	55	8	38	6	55	7	32	7	55	6	39	8	55	5	57	10	50	4	56
4	40	10	32	17	5	56	8	37	6	56	7	31	7	56	6	38	8	56	5	56	10	52	4	55
4	45	10	23	17	5	57	8	36	6	57	7	30	7	57	6	37	8	57	5	56	10	54	4	54
4	50	10	15	17	5	58	8	35	6	58	7	29	7	58	6	37	8	58	5	55	10	56	4	53
4	55	10	7	16	5	59	8	33	6	59	7	28	7	59	6	36	8	59	5	55	10	58	4	52

(Ther. 50.)
(Bar. 30.)

*** Correction of a STAR's App. Alt. (*subtr.*)
(or Refraction in Alt.)**

(n)

AA	Corr.	AA	Corr.	AA	Corr.	AA	Corr.	AA	Corr.	AA	Corr.
1 0	4 51	13 0	4 7	15 0	3 34	20 0	2 39	30 0	1 40	50 0	0 49
1 2	4 50	13 2	4 7	15 5	3 33	20 10	2 37	30 20	1 39	50 30	0 48
1 4	4 40	13 4	4 6	15 10	3 32	20 20	2 36	30 40	1 38	51 0	0 47
1 6	4 49	13 6	4 6	15 15	3 31	20 30	2 35	31 0	1 37	51 30	0 46
1 8	4 48	13 8	4 5	15 20	3 30	20 40	2 33	31 20	1 35	52 0	0 45
1 10	4 47	13 10	4 4	15 25	3 28	20 50	2 32	31 40	1 34	52 30	0 45
1 12	4 46	13 12	4 4	15 30	3 27	21 0	2 30	32 0	1 33	53 0	0 44
1 14	4 45	13 14	4 3	15 35	3 26	21 10	2 29	32 20	1 32	53 30	0 43
1 16	4 45	13 16	4 3	15 40	3 25	21 20	2 28	32 40	1 31	54 0	0 42
1 18	4 44	13 18	4 2	15 45	3 24	21 30	2 27	33 0	1 29	54 30	0 41
1 20	4 43	13 20	4 1	15 50	3 23	21 40	2 26	33 20	1 28	55 0	0 41
1 22	4 42	13 22	4 1	15 55	3 22	21 50	2 24	33 40	1 27	55 30	0 40
1 24	4 41	13 24	4 0	16 0	3 21	22 0	2 23	34 0	1 26	56 0	0 39
1 26	4 41	13 26	4 0	16 5	3 20	22 10	2 22	34 20	1 25	56 30	0 38
1 28	4 40	13 28	3 59	16 10	3 18	22 20	2 21	34 40	1 24	57 0	0 38
1 30	4 39	13 30	3 58	16 15	3 17	22 30	2 20	35 0	1 23	57 30	0 37
1 32	4 38	13 32	3 58	16 20	3 16	22 40	2 19	35 20	1 22	58 0	0 36
1 34	4 37	13 34	3 57	16 25	3 15	22 50	2 18	35 40	1 21	58 30	0 36
1 36	4 37	13 36	3 57	16 30	3 14	23 0	2 16	36 0	1 20	59 0	0 35
1 38	4 36	13 38	3 56	16 35	3 13	23 10	2 15	36 20	1 19	59 30	0 34
1 40	4 35	13 40	3 55	16 40	3 12	23 20	2 14	36 40	1 18	60 0	0 34
1 42	4 34	13 42	3 55	16 45	3 11	23 30	2 13	37 0	1 17	60 30	0 33
1 44	4 33	13 44	3 54	16 50	3 10	23 40	2 12	37 20	1 16	61 0	0 32
1 46	4 33	13 46	3 54	16 55	3 9	23 50	2 11	37 40	1 15	61 30	0 32
1 48	4 32	13 48	3 53	17 0	3 8	24 0	2 10	38 0	1 14	62 0	0 31
1 50	4 31	13 50	3 53	17 5	3 7	24 10	2 9	38 20	1 13	62 30	0 30
1 52	4 30	13 52	3 52	17 10	3 7	24 20	2 8	38 40	1 13	63 0	0 30
1 54	4 30	13 54	3 51	17 15	3 6	24 30	2 7	39 0	1 12	63 30	0 29
1 56	4 29	13 56	3 51	17 20	3 5	24 40	2 6	39 20	1 11	64 0	0 28
1 58	4 29	13 58	3 50	17 25	3 4	24 50	2 5	39 40	1 10	64 30	0 28
2 0	4 28	14 0	3 50	17 30	3 3	25 0	2 4	40 0	1 9	65 0	0 27
2 2	4 27	14 2	3 49	17 35	3 2	25 10	2 3	40 20	1 8	65 30	0 26
2 4	4 27	14 4	3 49	17 40	3 1	25 20	2 2	40 40	1 8	66 0	0 26
2 6	4 26	14 6	3 48	17 45	3 0	25 30	2 1	41 0	1 7	66 30	0 25
2 8	4 25	14 8	3 48	17 50	2 59	25 40	2 1	41 20	1 6	67 0	0 25
2 10	4 24	14 10	3 47	17 55	2 58	25 50	2 0	41 40	1 5	67 30	0 24
2 12	4 24	14 12	3 47	18 0	2 58	26 0	1 59	42 0	1 5	68 0	0 23
2 14	4 23	14 14	3 46	18 5	2 57	26 10	1 58	42 20	1 4	69 0	0 22
2 16	4 22	14 16	3 45	18 10	2 56	26 20	1 57	42 40	1 3	70 0	0 21
2 18	4 21	14 18	3 45	18 15	2 55	26 30	1 56	43 0	1 2	71 0	0 20
2 20	4 21	14 20	3 44	18 20	2 54	26 40	1 55	43 20	1 2	72 0	0 19
2 22	4 20	14 22	3 44	18 25	2 53	26 50	1 55	43 40	1 1	73 0	0 18
2 24	4 19	14 24	3 43	18 30	2 53	27 0	1 54	44 0	1 0	74 0	0 17
2 26	4 19	14 26	3 43	18 35	2 52	27 10	1 53	44 20	1 0	75 0	0 15
2 28	4 18	14 28	3 42	18 40	2 51	27 20	1 52	44 40	0 59	76 0	0 14
2 30	4 17	14 30	3 42	18 45	2 50	27 30	1 51	45 0	0 58	77 0	0 13
2 32	4 17	14 32	3 41	18 50	2 49	27 40	1 51	45 20	0 57	78 0	0 12
2 34	4 16	14 34	3 41	18 55	2 48	27 50	1 50	45 40	0 57	79 0	0 11
2 36	4 15	14 36	3 40	19 0	2 48	28 0	1 49	46 0	0 56	80 0	0 10
2 38	4 15	14 38	3 40	19 5	2 47	28 10	1 48	46 20	0 55	81 0	0 9
2 40	4 14	14 40	3 39	19 10	2 46	28 20	1 48	46 40	0 55	82 0	0 8
2 42	4 13	14 42	3 39	19 15	2 45	28 30	1 47	47 0	0 54	83 0	0 7
2 44	4 13	14 44	3 38	19 20	2 45	28 40	1 46	47 20	0 53	84 0	0 6
2 46	4 12	14 46	3 38	19 25	2 44	28 50	1 45	47 40	0 53	85 0	0 5
2 48	4 11	14 48	3 37	19 30	2 43	29 0	1 45	48 0	0 52	86 0	0 4
2 50	4 11	14 50	3 37	19 35	2 42	29 10	1 44	48 20	0 52	87 0	0 3
2 52	4 10	14 52	3 36	19 40	2 42	29 20	1 43	48 40	0 51	88 0	0 2
2 54	4 9	14 54	3 36	19 45	2 41	29 30	1 43	49 0	0 50	89 0	0 1
2 56	4 9	14 56	3 35	19 50	2 40	29 40	1 42	49 20	0 50	90 0	0 0
2 58	4 8	14 58	3 35	19 55	2 39	29 50	1 41	49 40	0 49		

Table (o). For finding at what time the Sun passes the Prime Vertical.

Lat.	Dist.	Lat.	Dist.	Lat.	Dist.	Lat.	Dist.	Lat.	Dist.	Lat.	Dist.	Lat.	Dist.	Lat.	Dist.
o		o		o		o		o		o		o		o	
1	1.7	9	15.8	17	30.5	25	46.6	33	64.9	41	86.9	49	115.0	57	154.0
2	3.5	10	17.6	18	32.4	26	48.7	34	67.4	42	90.0	50	119.2	58	160.1
3	5.2	11	19.4	19	34.4	27	50.9	35	70.0	43	93.2	51	123.5	59	166.5
4	7.0	12	21.2	20	36.4	28	53.1	36	72.6	44	96.5	52	128.0	60	173.2
5	8.7	13	23.0	21	38.4	29	55.4	37	75.3	45	100.0	53	132.7	61	180.4
6	10.5	14	24.9	22	40.4	30	57.7	38	78.1	46	103.6	54	137.6	62	188.1
7	12.2	15	26.8	23	42.4	31	60.0	39	80.9	47	107.3	55	142.8	63	196.2
8	14.0	16	28.6	24	44.5	32	62.4	40	83.9	48	111.0	56	148.3	64	205.0
Dec.	Dep.	Dec.	Dep.	Dec.	Dep.	Dec.	Dep.	Dec.	Dep.	Dec.	Dep.	Dec.	Dep.	Dec.	Dep.

(I.) With Lat. and Dec. take out Dist. and Dep. (II.) From Travers. Table take corresponding Course. (III.) The Time will be found in Azimuth Table, opposite the Degrees of this Course.

N.B. From the above Table and the Azimuth Table can be determined with sufficient accuracy the Variation or Deviation at sea.

AZIMUTH TABLE.

App. T. from Noon.	N.	Deg.	App. T. from Noon.	N.	Deg.	App. T. from Noon.	N.	Deg.	App. T. from Noon.	N.	Deg.	App. T. from Noon.	N.	Deg.
h. m.			h. m.			h. m.			h. m.			h. m.		
0 0	0.0	90	1 12	77.3	72	2 24	146.9	54	3 36	202.3	36	4 48	237.8	18
4	4.4	89	16	81.4	71	28	150.5	53	40	204.8	35	52	239.1	17
8	8.7	88	20	85.5	70	32	153.9	52	44	207.3	34	56	240.3	16
12	13.1	87	24	89.6	69	36	157.3	51	48	209.7	33	5 0	241.5	15
16	17.4	86	28	93.7	68	40	160.7	50	52	212.0	32	4	242.6	14
20	21.8	85	32	97.7	67	44	164.0	49	56	214.3	31	8	243.6	13
24	26.1	84	36	101.7	66	48	167.3	48	4 0	216.5	30	12	244.5	12
28	30.5	83	40	105.7	65	52	170.5	47	4	218.7	29	16	245.4	11
32	34.8	82	44	109.6	64	56	173.7	46	8	220.7	28	20	246.2	10
36	39.1	81	48	113.5	63	3 0	176.8	45	12	222.8	27	24	246.9	9
40	43.4	80	52	117.4	62	4	179.8	44	16	224.7	26	28	247.6	8
44	47.7	79	56	121.2	61	8	182.8	43	20	226.6	25	32	248.1	7
48	52.0	78	2 0	125.0	60	12	185.8	42	24	228.4	24	36	248.6	6
52	56.2	77	4	128.8	59	16	188.7	41	28	230.1	23	40	249.0	5
56	60.5	76	8	132.5	58	20	191.5	40	32	231.8	22	44	249.4	4
1 0	64.7	75	12	136.2	57	24	194.3	39	36	233.4	21	48	249.7	3
4	68.9	74	16	139.8	56	28	197.0	38	40	234.9	20	52	249.8	2
8	73.1	73	20	143.4	55	32	199.7	37	44	236.4	19	56	249.9	1
												6 0	250.0	0
	Dist.	Alt.		Dist.	Alt.		Dist.	Alt.		Dist.	Alt.		Dist.	Alt.

(I.) For Appt. Time from Noon take out N. (II.) With N. as dist. and codeclin. as course, find dep. (Trav. Table). (III.) For Altitude take out dist. The course corresponding to this dist. and the above dep. will be Azimuth, which mark N. or S., according as Sun is N. or S. of Prime Vertical, and E. or W. as the time is A.M. or P.M.

(o)1.

Increase of R. A. of
Mean Sun, or of Sid.
Time at Mean Noon,
for Hours, Minutes,
and Seconds of Mean
Time.

	For Hours.	For Minutes.	For Seconds.
	^m	^{Sec.}	^{Sec.}
1 0	9.8565	0.164	0.003
2 0	19.713	0.329	0.006
3 0	29.569	0.493	0.008
4 0	39.426	0.658	0.011
5 0	49.282	0.822	0.014
6 0	59.139	0.986	0.017
7 1	8.935	1.150	0.019
8 1	18.852	1.315	0.022
9 1	28.708	1.479	0.025
10 1	38.565	1.643	0.027
11 1	48.421	1.807	0.030
12 1	58.278	1.972	0.033
13 2	8.134	2.136	0.036
14 2	17.991	2.300	0.038
15 2	27.847	2.464	0.041
16 2	37.704	2.629	0.044
17 2	47.560	2.793	0.047
18 2	57.417	2.957	0.050
19 3	7.273	3.121	0.053
20 3	17.130	3.286	0.055
21 3	26.987	3.450	0.058
22 3	36.844	3.614	0.061
23 3	46.700	3.779	0.064
24 3	56.556	3.943	0.066
25		4.108	0.069
26		4.272	0.072
27		4.436	0.075
28		4.600	0.077
29		4.764	0.080
30		4.928	0.082
31		5.092	0.085
32		5.257	0.088
33		5.421	0.091
34		5.585	0.094
35		5.750	0.097
36		5.914	0.100
37		6.078	0.103
38		6.242	0.106
39		6.407	0.108
40		6.571	0.111
41		6.735	0.114
42		6.900	0.116
43		7.064	0.119
44		7.228	0.122
45		7.393	0.125
46		7.557	0.128
47		7.722	0.131
48		7.886	0.133
49		8.050	0.136
50		8.214	0.138
51		8.378	0.141
52		8.543	0.144
53		8.707	0.147
54		8.872	0.150
55		9.036	0.152
56		9.200	0.155
57		9.364	0.157
58		9.528	0.159
59		9.692	0.162

(o)2

Distance of objects first seen at sea when eye on sea: if eye at known
distance above sea, add distance for that height.

Height. Ft.	Distance. Naut. Miles.	Height. Ft.	Distance. Naut. Miles.	Height. Ft.	Distance. Naut. Miles.	Height. Ft.	Distance. Naut. Miles.	Height. Ft.	Distance. Naut. Miles.	Height. Ft.	Distance. Naut. Miles.	Height. Ft.	Distance. Naut. Miles.	Height. Ft.	Distance. Naut. Miles.
1	1.15	22	5.40	43	7.54	120	12.60	300	19.91	520	26.22	940	35.25	2800	60.8
2	1.63	23	5.51	44	7.62	125	12.85	310	20.24	540	26.71	960	35.62	2900	61.9
3	1.99	24	5.63	45	7.70	130	13.11	320	20.57	560	27.21	980	35.99	3000	63.0
4	2.31	25	5.75	46	7.79	135	13.36	330	20.88	580	27.69	1000	36.40	3100	64.1
5	2.58	26	5.87	47	7.88	140	13.60	340	21.20	600	28.17	1100	38.10	3200	65.0
6	2.82	27	5.98	48	7.97	145	13.84	350	21.51	620	28.62	1200	39.90	3300	66.0
7	3.04	28	6.08	49	8.05	150	14.08	360	21.81	640	29.09	1300	41.40	3400	67.0
8	3.25	29	6.19	50	8.12	160	14.54	370	22.12	660	29.54	1400	43.00	3500	68.0
9	3.45	30	6.30	55	8.52	170	14.99	380	22.41	680	29.98	1500	44.50	3600	69.0
10	3.64	31	6.41	60	8.91	180	15.43	390	22.71	700	30.42	1600	46.00	3700	69.9
11	3.81	32	6.50	65	9.27	190	15.85	400	22.99	720	30.85	1700	47.40	3800	70.9
12	3.99	33	6.60	70	9.62	200	16.26	410	23.28	740	31.28	1800	48.80	3900	71.8
13	4.14	34	6.70	75	9.96	210	16.66	420	23.56	760	31.70	1900	50.20	4000	72.7
14	4.30	35	6.80	80	10.28	220	17.03	430	23.84	780	32.11	2000	51.50	4100	73.6
15	4.45	36	6.90	85	10.60	230	17.43	440	24.12	800	32.52	2100	52.70	4200	74.5
16	4.60	37	6.99	90	10.90	240	17.81	450	24.39	820	32.92	2200	54.00	4300	75.4
17	4.74	38	7.09	95	11.20	250	18.16	460	24.65	840	33.32	2300	55.10	4400	76.2
18	4.88	39	7.18	100	11.50	260	18.54	470	24.93	860	33.72	2400	56.30	4500	77.0
19	5.02	40	7.27	105	11.79	270	18.90	480	25.18	880	34.11	2500	57.50	4600	77.9
20	5.15	41	7.36	110	12.06	280	19.24	490	25.45	900	34.49	2600	58.70	4700	78.8
21	5.27	42	7.45	115	12.34	290	19.58	500	25.70	920	34.88	2700	59.80	1 mile	83.5

(o)3

Equation of 2nd Differences.
(Multiply Tab. Nr. by Second
Difference.)

For Period 1h.	Tab. Number.	For Period 2h.
^m		^h ^m ^h ^m
0	60	0.00000 0 0 3 0
1	59	0.00819 0 3 2 57
2	58	0.01611 0 6 2 54
3	57	0.02375 0 9 2 51
4	56	0.03111 0 12 2 48
5	55	0.03819 0 15 2 45
6	54	0.04500 0 18 2 42
7	53	0.05153 0 21 2 39
8	52	0.05778 0 24 2 36
9	51	0.06375 0 27 2 33
10	50	0.06944 0 30 2 30
11	49	0.07486 0 33 2 27
12	48	0.08000 0 36 2 24
13	47	0.08486 0 39 2 21
14	46	0.08944 0 42 2 18
15	45	0.09375 0 45 2 15
16	44	0.09778 0 48 2 12
17	43	0.10153 0 51 2 9
18	42	0.10500 0 54 2 6
19	41	0.10819 0 57 2 3
20	40	0.11111 1 0 2 0
21	39	0.11375 1 3 1 57
22	38	0.11611 1 6 1 54
23	37	0.11819 1 9 1 51
24	36	0.12000 1 12 1 48
25	35	0.12153 1 15 1 45
26	34	0.12278 1 18 1 42
27	33	0.12375 1 21 1 39
28	32	0.12444 1 24 1 36
29	31	0.12486 1 27 1 33
30	30	0.12500 1 30 1 30

(o)4

Logarithms for clearing Distance.

Alt.	For Sun.	For Star.	Alt.	For Sun.	For Star.
3	.000032	.000093	37	.000108	.000120
4	.000101	.000102	38	.000108	.000120
5	.000106	.000107	39	.000108	.000120
6	.000109	.000111	40	.000108	.000120
7	.000111	.000113	41	.000107	.000120
8	.000112	.000114	42	.000107	.000120
9	.000113	.000115	43	.000107	.000120
10	.000113	.000116	44	.000107	.000120
11	.000113	.000117	45	.000107	.000120
12	.000113	.000117	46	.000107	.000120
13	.000113	.000118	47	.000106	.000120
14	.000113	.000118	48	.000106	.000120
15	.000113	.000119	49	.000106	.000120
16	.000113	.000119	50	.000105	.000120
17	.000113	.000119	51	.000105	.000120
18	.000113	.000119	52	.000105	.000120
19	.000113	.000119	53	.000105	.000120
20	.000113	.000119	54	.000105	.000120
21	.000112	.000119	55	.000104	.000120
22	.000112	.000119	56	.000104	.000120
23	.000112	.000119	57	.000104	.000120
24	.000112	.000119	58	.000104	.000120
25	.000112	.000119	59	.000104	.000120
26	.000111	.000119	60	.000104	.000120
27	.000111	.000120	61	.000104	.000120
28	.000111	.000120	62	.000104	.000120
29	.000111	.000120	63	.000103	.000120
30	.000110	.000120	64	.000103	.000120
31	.000110	.000120	65	.000103	.000120
32	.000110	.000120	66	.000103	.000120
33	.000109	.000120	67	.000103	.000120
34	.000109	.000120	68	.000103	.000120
35	.000109	.000120	69	.000102	.000120
36	.000109	.000120	90	.000102	.000120

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LOGISTIC LOGARITHMS.

Sec.	0 ^m	1 ^m	2 ^m	3 ^m	4 ^m	5 ^m	6 ^m	7 ^m	8 ^m	9 ^m
0		1.77815	1.47712	1.30103	1.17609	1.07918	1.00000	.93305	.87506	.82391
2	3.25527	1.76391	1.46994	1.29623	1.17249	1.07630	.99760	.93099	.87326	.82230
4	2.95424	1.75012	1.46288	1.29149	1.16891	1.07343	.99520	.92894	.87146	.82070
6	2.77815	1.73676	1.45593	1.28679	1.16537	1.07058	.99282	.92689	.86967	.81911
8	2.65321	1.72379	1.44909	1.28215	1.16185	1.06775	.99046	.92486	.86788	.81752
10	2.55630	1.71121	1.44236	1.27755	1.15836	1.06494	.98810	.92284	.86611	.81594
12	2.47712	1.69897	1.43573	1.27300	1.15490	1.06215	.98576	.92082	.86433	.81436
14	2.41018	1.68707	1.42920	1.26850	1.15147	1.05937	.98343	.91881	.86258	.81279
16	2.35218	1.67549	1.42276	1.26405	1.14806	1.05662	.98112	.91682	.86082	.81123
18	2.30103	1.66421	1.41642	1.25964	1.14468	1.05388	.97881	.91483	.85907	.80967
20	2.25527	1.65321	1.41018	1.25527	1.14133	1.05115	.97652	.91285	.85733	.80812
22	2.21388	1.64249	1.40402	1.25095	1.13800	1.04845	.97424	.91088	.85560	.80657
24	2.17609	1.63202	1.39794	1.24667	1.13470	1.04576	.97197	.90892	.85387	.80503
26	2.14133	1.62181	1.39195	1.24244	1.13142	1.04309	.96972	.90697	.85215	.80349
28	2.10915	1.61182	1.38604	1.23824	1.12817	1.04043	.96747	.90503	.85044	.80196
30	2.07918	1.60206	1.38021	1.23408	1.12494	1.03779	.96524	.90309	.84873	.80043
32	2.05115	1.59252	1.37446	1.22997	1.12173	1.03517	.96302	.90117	.84703	.79891
34	2.02482	1.58318	1.36878	1.22590	1.11855	1.03256	.96081	.89925	.84534	.79740
36	2.00000	1.57403	1.36318	1.22185	1.11540	1.02996	.95861	.89734	.84365	.79588
38	1.97652	1.56508	1.35765	1.21785	1.11226	1.02739	.95642	.89544	.84197	.79438
40	1.95424	1.55630	1.35218	1.21388	1.10915	1.02482	.95424	.89355	.84030	.79288
42	1.93305	1.54770	1.34679	1.20995	1.10605	1.02228	.95208	.89166	.83863	.79138
44	1.91285	1.53927	1.34146	1.20606	1.10300	1.01975	.94992	.88980	.83697	.78990
46	1.89355	1.53100	1.33620	1.20220	1.09994	1.01723	.94778	.88792	.83532	.78841
48	1.87506	1.52288	1.33100	1.19837	1.09691	1.01472	.94564	.88606	.83367	.78693
50	1.85733	1.51491	1.32585	1.19458	1.09391	1.01224	.94352	.88421	.83203	.78545
52	1.84030	1.50709	1.32078	1.19082	1.09092	1.00976	.94141	.88236	.83040	.78398
54	1.82391	1.49940	1.31575	1.18710	1.08796	1.00730	.93930	.88053	.82876	.78252
56	1.80812	1.49185	1.31079	1.18340	1.08501	1.00485	.93721	.87870	.82714	.78106
58	1.79288	1.48442	1.30588	1.17973	1.08210	1.00242	.93513	.87688	.82552	.77960
60	1.77815	1.47712	1.30103	1.17610	1.07918	1.00000	.93305	.87506	.82391	.77815

Sec.	10 ^m	11 ^m	12 ^m	13 ^m	14 ^m	15 ^m	16 ^m	17 ^m	18 ^m	19 ^m
0	.77815	.73676	.69897	.66421	.63202	.60206	.57403	.54770	.52288	.49940
2	.77671	.73545	.69777	.66310	.63099	.60110	.57313	.54685	.52208	.49864
4	.77527	.73414	.69657	.66199	.62996	.60014	.57223	.54600	.52127	.49788
6	.77383	.73283	.69537	.66088	.62893	.59918	.57133	.54516	.52047	.49712
8	.77240	.73153	.69417	.65978	.62791	.59822	.57043	.54431	.51967	.49636
10	.77097	.73023	.69298	.65868	.62688	.59726	.56953	.54347	.51888	.49561
12	.76955	.72893	.69179	.65758	.62586	.59631	.56864	.54262	.51808	.49485
14	.76814	.72764	.69061	.65648	.62485	.59536	.56774	.54178	.51729	.49410
16	.76672	.72636	.68943	.65539	.62383	.59441	.56685	.54094	.51649	.49335
18	.76532	.72507	.68825	.65430	.62282	.59346	.56596	.54011	.51570	.49260
20	.76391	.72379	.68707	.65321	.62181	.59252	.56508	.53927	.51491	.49185
22	.76251	.72252	.68590	.65213	.62080	.59157	.56419	.53844	.51412	.49110
24	.76112	.72125	.68473	.65105	.61979	.59063	.56331	.53760	.51333	.49035
26	.75973	.71998	.68356	.64997	.61879	.58969	.56243	.53677	.51255	.48961
28	.75834	.71872	.68240	.64889	.61778	.58876	.56155	.53594	.51176	.48886
30	.75696	.71745	.68124	.64782	.61678	.58782	.56067	.53511	.51098	.48812
32	.75559	.71620	.68009	.64675	.61579	.58689	.55979	.53429	.51020	.48738
34	.75421	.71494	.67893	.64568	.61479	.58596	.55892	.53346	.50942	.48662
36	.75285	.71369	.67778	.64461	.61380	.58503	.55804	.53264	.50864	.48590
38	.75148	.71245	.67663	.64355	.61281	.58410	.55717	.53182	.50786	.48516
40	.75012	.71121	.67549	.64249	.61182	.58318	.55630	.53100	.50709	.48442
42	.74877	.70997	.67435	.64143	.61084	.58225	.55544	.53018	.50631	.48369
44	.74742	.70873	.67321	.64038	.60985	.58133	.55457	.52936	.50554	.48295
46	.74607	.70750	.67207	.63932	.60887	.58041	.55371	.52855	.50477	.48222
48	.74473	.70627	.67094	.63827	.60789	.57950	.55284	.52773	.50399	.48149
50	.74339	.70505	.66981	.63723	.60691	.57858	.55198	.52692	.50323	.48076
52	.74206	.70382	.66869	.63618	.60594	.57767	.55112	.52611	.50246	.48003
54	.74073	.70261	.66756	.63514	.60497	.57676	.55027	.52530	.50169	.47930
56	.73940	.70139	.66644	.63410	.60400	.57585	.54941	.52449	.50093	.47857
58	.73808	.70018	.66532	.63306	.60303	.57494	.54856	.52368	.50016	.47785
60	.73676	.69897	.66421	.63202	.60206	.57403	.54770	.52288	.49940	.47712

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LOGISTIC LOGARITHMS.

Sec.	20"	21"	22"	23"	24"	25"	26"	27"	28"	29"
0	.47719	.45593	.43573	.41642	.39794	.38021	.36318	.34679	.33099	.31575
2	.47640	.45524	.43507	.41580	.39734	.37963	.36262	.34625	.33048	.31526
4	.47568	.45456	.43442	.41517	.39674	.37906	.36207	.34572	.32996	.31476
6	.47496	.45387	.43376	.41454	.39614	.37848	.36151	.34518	.32945	.31426
8	.47424	.45318	.43311	.41391	.39554	.37790	.36096	.34465	.32893	.31376
10	.47352	.45250	.43243	.41329	.39494	.37733	.36040	.34412	.32842	.31327
12	.47280	.45182	.43180	.41266	.39434	.37675	.35985	.34358	.32790	.31277
14	.47209	.45113	.43115	.41204	.39374	.37618	.35930	.34305	.32739	.31227
16	.47137	.45045	.43050	.41142	.39314	.37560	.35875	.34252	.32688	.31178
18	.47066	.44977	.42985	.41080	.39255	.37503	.35820	.34199	.32637	.31126
20	.46994	.44909	.42920	.41018	.39195	.37446	.35765	.34146	.32585	.31079
22	.46923	.44842	.42855	.40956	.39136	.37389	.35710	.34093	.32534	.31030
24	.46852	.44774	.42790	.40894	.39076	.37332	.35655	.34040	.32483	.30981
26	.46781	.44706	.42726	.40832	.39017	.37275	.35600	.33987	.32432	.30931
28	.46711	.44639	.42661	.40770	.38958	.37218	.35545	.33933	.32382	.30882
30	.46640	.44571	.42597	.40708	.38899	.37161	.35481	.33862	.32331	.30833
32	.46569	.44504	.42533	.40647	.38840	.37104	.35436	.33829	.32280	.30784
34	.46499	.44437	.42469	.40585	.38781	.37048	.35382	.33777	.32229	.30735
36	.46429	.44370	.42404	.40524	.38722	.36991	.35327	.33724	.32179	.30686
38	.46358	.44303	.42340	.40463	.38663	.36935	.35273	.33672	.32128	.30637
40	.46288	.44236	.42276	.40402	.38604	.36876	.35216	.33620	.32078	.30588
42	.46218	.44169	.42213	.40340	.38546	.36822	.35164	.33567	.32027	.30540
44	.46148	.44103	.42149	.40279	.38487	.36768	.35110	.33515	.31977	.30491
46	.46079	.44036	.42085	.40218	.38428	.36709	.35050	.33463	.31926	.30442
48	.46009	.43970	.42022	.40156	.38370	.36653	.35002	.33411	.31876	.30393
50	.45939	.43903	.41958	.40097	.38312	.36597	.34946	.33359	.31826	.30345
52	.45870	.43837	.41895	.40036	.38253	.36541	.34894	.33307	.31776	.30297
54	.45801	.43771	.41833	.39975	.38195	.36485	.34840	.33255	.31725	.30248
56	.45731	.43705	.41769	.39915	.38137	.36429	.34786	.33203	.31675	.30200
58	.45662	.43639	.41705	.39854	.38079	.36374	.34733	.33151	.31625	.30151
60	.45593	.43573	.41642	.39794	.38021	.36318	.34679	.33099	.31575	.30103
Sec.	30"	31"	32"	33"	34"	35"	36"	37"	38"	39"
0	.30103	.28679	.27300	.25964	.24667	.23408	.22185	.20993	.19837	.18709
2	.30055	.28632	.27255	.25920	.24625	.23367	.22145	.20956	.19799	.18672
4	.30007	.28586	.27210	.25876	.24582	.23326	.22105	.20917	.19761	.18635
6	.29959	.28539	.27165	.25832	.24540	.23285	.22065	.20878	.19723	.18598
8	.29911	.28493	.27120	.25789	.24497	.23243	.22024	.20839	.19685	.18561
10	.29863	.28446	.27075	.25745	.24455	.23202	.21984	.20800	.19647	.18524
12	.29815	.28400	.27030	.25701	.24413	.23161	.21944	.20761	.19609	.18487
14	.29767	.28353	.26985	.25658	.24370	.23120	.21904	.20722	.19571	.18450
16	.29719	.28307	.26940	.25614	.24328	.23079	.21864	.20683	.19533	.18413
18	.29671	.28261	.26895	.25571	.24286	.23038	.21825	.20644	.19495	.18376
20	.29623	.28215	.26850	.25527	.24244	.22997	.21785	.20606	.19458	.18339
22	.29576	.28168	.26805	.25484	.24202	.22956	.21745	.20567	.19420	.18301
24	.29528	.28122	.26761	.25441	.24159	.22915	.21705	.20528	.19382	.18266
26	.29480	.28076	.26716	.25397	.24117	.22874	.21665	.20489	.19344	.18229
28	.29433	.28030	.26671	.25354	.24075	.22833	.21626	.20451	.19307	.18192
30	.29385	.27984	.26627	.25311	.24033	.22792	.21586	.20413	.19269	.18156
32	.29338	.27938	.26582	.25268	.23991	.22752	.21546	.20374	.19232	.18119
34	.29290	.27892	.26538	.25224	.23949	.22711	.21507	.20335	.19194	.18082
36	.29243	.27847	.26493	.25181	.23908	.22670	.21467	.20297	.19157	.18046
38	.29196	.27801	.26449	.25139	.23866	.22630	.21428	.20258	.19119	.18009
40	.29149	.27755	.26406	.25095	.23824	.22589	.21388	.20220	.19082	.17973
42	.29101	.27709	.26360	.25052	.23782	.22548	.21349	.20181	.19044	.17936
44	.29054	.27664	.26316	.25009	.23741	.22508	.21309	.20143	.19007	.17900
46	.29007	.27618	.26272	.24966	.23699	.22467	.21270	.20104	.18969	.17863
48	.28960	.27573	.26228	.24924	.23657	.22427	.21230	.20066	.18932	.17827
50	.28913	.27527	.26184	.24881	.23616	.22387	.21191	.20028	.18895	.17791
52	.28866	.27482	.26140	.24838	.23574	.22346	.21152	.19990	.18858	.17754
54	.28819	.27436	.26096	.24795	.23533	.22306	.21113	.19951	.18820	.17718
56	.28773	.27391	.26052	.24753	.23491	.22265	.21073	.19913	.18783	.17682
58	.28726	.27346	.26008	.24710	.23450	.22225	.21034	.19875	.18746	.17645
60	.28679	.27300	.25964	.24667	.23408	.22185	.21000	.19837	.18709	.17609

LOGISTIC LOGARITHMS.

Sec.	40 ^m	41 ^m	42 ^m	43 ^m	44 ^m	45 ^m	46 ^m	47 ^m	48 ^m	49 ^m
0	.17609	.16537	.15490	.14468	.13470	.12494	.11539	.10605	.09691	.08796
2	.17573	.16502	.15456	.14435	.13437	.12462	.11508	.10575	.09661	.08766
4	.17537	.16466	.15421	.14401	.13404	.12430	.11477	.10544	.09631	.08737
6	.17501	.16431	.15387	.14368	.13371	.12398	.11445	.10513	.09601	.08707
8	.17465	.16396	.15353	.14334	.13339	.12366	.11414	.10482	.09571	.08678
10	.17429	.16361	.15318	.14300	.13306	.12333	.11382	.10452	.09541	.08648
12	.17393	.16326	.15284	.14267	.13273	.12301	.11351	.10421	.09511	.08619
14	.17357	.16290	.15250	.14233	.13240	.12269	.11320	.10390	.09481	.08589
16	.17321	.16255	.15215	.14200	.13208	.12237	.11288	.10360	.09451	.08560
18	.17286	.16220	.15181	.14166	.13175	.12205	.11257	.10329	.09421	.08531
20	.17249	.16185	.15147	.14133	.13142	.12173	.11226	.10299	.09391	.08501
22	.17213	.16150	.15113	.14100	.13110	.12142	.11195	.10268	.09361	.08472
24	.17177	.16115	.15079	.14066	.13077	.12110	.11163	.10237	.09331	.08443
26	.17141	.16080	.15045	.14033	.13044	.12078	.11132	.10207	.09301	.08413
28	.17106	.16045	.15010	.14000	.13012	.12046	.11101	.10176	.09271	.08384
30	.17070	.16010	.14976	.13966	.12979	.12014	.11070	.10146	.09241	.08355
32	.17034	.15976	.14942	.13933	.12947	.11982	.11039	.10115	.09211	.08325
34	.16998	.15941	.14908	.13900	.12914	.11951	.11008	.10085	.09181	.08296
36	.16963	.15906	.14874	.13867	.12882	.11919	.10977	.10055	.09152	.08267
38	.16927	.15871	.14840	.13833	.12849	.11887	.10946	.10024	.09122	.08238
40	.16891	.15836	.14806	.13800	.12817	.11855	.10915	.09994	.09092	.08209
42	.16856	.15802	.14773	.13767	.12784	.11824	.10884	.09963	.09062	.08180
44	.16820	.15767	.14739	.13734	.12752	.11792	.10853	.09933	.09033	.08150
46	.16785	.15732	.14705	.13701	.12720	.11760	.10822	.09903	.09003	.08121
48	.16749	.15698	.14671	.13668	.12687	.11729	.10791	.09872	.08973	.08092
50	.16714	.15663	.14637	.13635	.12655	.11697	.10760	.09842	.08944	.08063
52	.16678	.15628	.14603	.13602	.12623	.11666	.10729	.09812	.08914	.08034
54	.16643	.15594	.14570	.13569	.12591	.11634	.10698	.09782	.08884	.08005
56	.16608	.15559	.14536	.13536	.12558	.11602	.10667	.09751	.08855	.07976
58	.16572	.15525	.14502	.13503	.12526	.11571	.10636	.09721	.08825	.07947
60	.16537	.15490	.14468	.13470	.12494	.11539	.10605	.09691	.08796	.07918
Sec.	50 ^m	51 ^m	52 ^m	53 ^m	54 ^m	55 ^m	56 ^m	57 ^m	58 ^m	59 ^m
0	.07918	.07058	.06215	.05388	.04576	.03779	.02996	.02228	.01472	.00730
2	.07889	.07030	.06187	.05360	.04549	.03753	.02971	.02202	.01447	.00706
4	.07860	.07002	.06159	.05333	.04522	.03726	.02945	.02177	.01423	.00681
6	.07831	.06973	.06131	.05306	.04496	.03700	.02919	.02152	.01398	.00657
8	.07803	.06945	.06104	.05279	.04469	.03674	.02893	.02126	.01373	.00632
10	.07774	.06917	.06076	.05251	.04442	.03648	.02867	.02101	.01348	.00608
12	.07745	.06888	.06048	.05224	.04415	.03621	.02842	.02076	.01323	.00583
14	.07716	.06860	.06020	.05197	.04389	.03595	.02816	.02050	.01298	.00559
16	.07687	.06832	.05993	.05170	.04362	.03569	.02790	.02025	.01273	.00534
18	.07658	.06804	.05965	.05143	.04335	.03543	.02764	.02000	.01248	.00510
20	.07630	.06775	.05937	.05115	.04309	.03517	.02739	.01975	.01224	.00485
22	.07601	.06747	.05910	.05088	.04282	.03490	.02713	.01949	.01199	.00461
24	.07572	.06719	.05882	.05061	.04255	.03464	.02687	.01924	.01174	.00437
26	.07543	.06691	.05855	.05034	.04229	.03438	.02662	.01899	.01149	.00412
28	.07515	.06663	.05827	.05007	.04202	.03412	.02636	.01874	.01124	.00388
30	.07486	.06635	.05799	.04980	.04176	.03386	.02610	.01848	.01100	.00364
32	.07457	.06606	.05772	.04953	.04150	.03360	.02585	.01823	.01075	.00339
34	.07429	.06578	.05744	.04926	.04123	.03334	.02559	.01798	.01050	.00315
36	.07400	.06550	.05717	.04899	.04096	.03308	.02534	.01773	.01025	.00291
38	.07372	.06522	.05689	.04872	.04069	.03282	.02508	.01748	.01001	.00266
40	.07343	.06494	.05662	.04845	.04043	.03256	.02482	.01723	.00976	.00242
42	.07314	.06466	.05634	.04818	.04017	.03230	.02457	.01698	.00951	.00218
44	.07286	.06438	.05607	.04791	.03990	.03204	.02431	.01673	.00927	.00194
46	.07257	.06410	.05579	.04764	.03964	.03178	.02406	.01648	.00902	.00169
48	.07229	.06382	.05552	.04737	.03937	.03152	.02380	.01622	.00878	.00145
50	.07200	.06354	.05524	.04710	.03911	.03126	.02355	.01597	.00853	.00121
52	.07172	.06326	.05497	.04683	.03884	.03100	.02329	.01572	.00828	.00097
54	.07143	.06300	.05470	.04656	.03858	.03074	.02304	.01547	.00804	.00073
56	.07115	.06271	.05442	.04630	.03832	.03048	.02279	.01522	.00779	.00048
58	.07087	.06243	.05415	.04603	.03805	.03022	.02253	.01497	.00755	.00024
60	.07058	.06215	.05388	.04576	.03779	.02996	.02228	.01472	.00730	.00000

Greenwich Date Logarithm for the Moon. (p.)

Min.	0 ^h	1 ^h	2 ^h	3 ^h	4 ^h	5 ^h	6 ^h	7 ^h	8 ^h	9 ^h	10 ^h	11 ^h	Min.
0		1.07918	.77815	.60206	.47712	.38021	.30103	.23408	.17609	.12494	.07918	.03779	0
1	2.85733	1.07200	.77455	.59966	.47532	.37877	.29983	.23305	.17519	.12414	.07846	.03713	1
2	2.55630	1.06494	.77097	.59726	.47352	.37733	.29863	.23202	.17429	.12333	.07774	.03648	2
3	2.38021	1.05799	.76743	.59488	.47173	.37589	.29743	.23099	.17339	.12253	.07702	.03582	3
4	2.25527	1.05115	.76391	.59252	.46994	.37446	.29623	.22997	.17249	.12173	.07630	.03517	4
5	2.15836	1.04442	.76042	.59016	.46817	.37303	.29504	.22894	.17159	.12094	.07558	.03451	5
6	2.07918	1.03779	.75696	.58782	.46640	.37161	.29385	.22792	.17070	.12014	.07486	.03386	6
7	2.01924	1.03126	.75353	.58549	.46464	.37020	.29267	.22691	.16980	.11935	.07415	.03321	7
8	1.95424	1.02482	.75012	.58318	.46288	.36878	.29149	.22589	.16891	.11855	.07343	.03256	8
9	1.90309	1.01848	.74674	.58087	.46113	.36738	.29031	.22488	.16802	.11776	.07272	.03191	9
10	1.85733	1.01224	.74339	.57858	.45939	.36597	.28913	.22387	.16714	.11697	.07200	.03126	10
11	1.81594	1.00608	.74006	.57630	.45766	.36457	.28796	.22286	.16625	.11618	.07129	.03061	11
12	1.77815	1.00000	.73676	.57403	.45593	.36318	.28679	.22185	.16537	.11539	.07058	.02996	12
13	1.74339	.99401	.73348	.57178	.45421	.36179	.28562	.22085	.16449	.11461	.06987	.02932	13
14	1.71121	.98810	.73023	.56953	.45250	.36040	.28446	.21984	.16361	.11382	.06917	.02867	14
15	1.68124	.98227	.72700	.56730	.45079	.35902	.28330	.21884	.16273	.11304	.06846	.02803	15
16	1.65321	.97652	.72379	.56508	.44909	.35765	.28215	.21785	.16185	.11225	.06775	.02739	16
17	1.62688	.97084	.72061	.56287	.44740	.35627	.28099	.21685	.16098	.11148	.06705	.02675	17
18	1.60206	.96524	.71745	.56067	.44571	.35491	.27984	.21586	.16010	.11070	.06635	.02610	18
19	1.57858	.95971	.71432	.55848	.44403	.35354	.27869	.21487	.15923	.10992	.06564	.02546	19
20	1.55630	.95424	.71121	.55630	.44236	.35218	.27755	.21388	.15836	.10915	.06494	.02482	20
21	1.53511	.94885	.70811	.55414	.44069	.35083	.27641	.21290	.15750	.10837	.06424	.02419	21
22	1.51491	.94352	.70505	.55198	.43903	.34948	.27527	.21191	.15663	.10760	.06354	.02355	22
23	1.49561	.93826	.70200	.54984	.43738	.34813	.27413	.21093	.15577	.10683	.06285	.02291	23
24	1.47712	.93306	.69897	.54770	.43573	.34679	.27300	.20995	.15490	.10606	.06215	.02228	24
25	1.45939	.92791	.69597	.54558	.43409	.34545	.27187	.20897	.15404	.10529	.06145	.02164	25
26	1.44236	.92284	.69298	.54347	.43245	.34412	.27075	.20800	.15318	.10452	.06076	.02101	26
27	1.42597	.91781	.69002	.54136	.43082	.34279	.26962	.20703	.15233	.10375	.06007	.02038	27
28	1.41018	.91285	.68707	.53927	.42920	.34146	.26850	.20606	.15147	.10299	.05937	.01975	28
29	1.39494	.90794	.68415	.53719	.42758	.34014	.26738	.20509	.15062	.10222	.05868	.01911	29
30	1.38021	.90309	.68124	.53511	.42597	.33882	.26627	.20412	.14976	.10146	.05799	.01848	30
31	1.36597	.89829	.67836	.53305	.42436	.33751	.26516	.20316	.14891	.10070	.05730	.01786	31
32	1.35218	.89355	.67549	.53100	.42276	.33620	.26405	.20220	.14806	.09994	.05662	.01723	32
33	1.33882	.88885	.67264	.52895	.42117	.33489	.26294	.20124	.14722	.09918	.05593	.01660	33
34	1.32585	.88421	.66981	.52692	.41958	.33359	.26184	.20028	.14637	.09842	.05524	.01597	34
35	1.31327	.87961	.66700	.52490	.41800	.33229	.26074	.19932	.14553	.09767	.05456	.01535	35
36	1.30103	.87506	.66421	.52288	.41642	.33099	.25964	.19837	.14468	.09691	.05388	.01472	36
37	1.28913	.87056	.66143	.52087	.41485	.32970	.25854	.19742	.14384	.09616	.05319	.01410	37
38	1.27755	.86611	.65868	.51888	.41329	.32842	.25745	.19647	.14300	.09541	.05251	.01348	38
39	1.26627	.86170	.65594	.51689	.41173	.32713	.25636	.19552	.14217	.09466	.05183	.01286	39
40	1.25527	.85733	.65321	.51491	.41018	.32585	.25527	.19458	.14133	.09391	.05115	.01224	40
41	1.24455	.85301	.65051	.51294	.40863	.32458	.25419	.19363	.14050	.09316	.05048	.01162	41
42	1.23408	.84873	.64782	.51098	.40708	.32331	.25311	.19269	.13966	.09241	.04980	.01100	42
43	1.22387	.84451	.64515	.50903	.40555	.32204	.25203	.19175	.13883	.09167	.04912	.01038	43
44	1.21388	.84030	.64249	.50709	.40402	.32078	.25095	.19082	.13800	.09092	.04845	.00976	44
45	1.20412	.83614	.63985	.50515	.40249	.31951	.24988	.18988	.13717	.09018	.04777	.00914	45
46	1.19458	.83203	.63723	.50323	.40097	.31826	.24881	.18895	.13635	.08944	.04710	.00853	46
47	1.18524	.82795	.63462	.50131	.39945	.31700	.24774	.18802	.13552	.08870	.04643	.00791	47
48	1.17609	.82391	.63202	.49940	.39794	.31575	.24667	.18709	.13470	.08796	.04576	.00730	48
49	1.16714	.81991	.62945	.49750	.39644	.31451	.24561	.18616	.13388	.08722	.04509	.00669	49
50	1.15836	.81594	.62688	.49561	.39494	.31327	.24455	.18524	.13306	.08648	.04442	.00608	50
51	1.14976	.81201	.62434	.49372	.39344	.31203	.24349	.18431	.13224	.08575	.04375	.00546	51
52	1.14133	.80812	.62181	.49185	.39195	.31079	.24244	.18339	.13142	.08501	.04309	.00485	52
53	1.13306	.80426	.61929	.48998	.39047	.30956	.24138	.18247	.13061	.08428	.04242	.00424	53
54	1.12494	.80043	.61678	.48812	.38899	.30833	.24033	.18156	.12979	.08355	.04176	.00364	54
55	1.11697	.79664	.61430	.48627	.38751	.30711	.23929	.18064	.12898	.08282	.04109	.00303	55
56	1.10915	.79288	.61182	.48442	.38604	.30588	.23824	.17973	.12817	.08209	.04043	.00242	56
57	1.10146	.78915	.60936	.48259	.38458	.30467	.23720	.17882	.12736	.08136	.03977	.00181	57
58	1.09391	.78545	.60691	.48076	.38312	.30345	.23616	.17791	.12655	.08063	.03911	.00121	58
59	1.08648	.78179	.60448	.47894	.38166	.30224	.23512	.17700	.12574	.07991	.03845	.00060	59

Greenwich Date Logarithm for the Sun. (q.)

Min.	0 ^h	1 ^h	2 ^h	3 ^h	4 ^h	5 ^h	6 ^h	7 ^h	8 ^h	9 ^h	10 ^h	11 ^h	Min.
0		1.38021	1.07918	90309	77815	68124	60206	53511	47712	42597	38021	33882	0
1	3.15836	1.37303	1.07548	90069	77635	67980	60086	54408	47622	42517	37949	33816	1
2	2.85733	1.36597	1.07200	89829	77455	67836	59966	53305	47532	42436	37877	33751	2
3	2.68124	1.35902	1.06846	89591	77276	67692	59846	53202	47442	42356	37805	33685	3
4	2.55630	1.35218	1.06494	89355	77097	67549	59726	53090	47352	42276	37733	33620	4
5	2.45939	1.34545	1.06145	89119	76920	67406	59607	52997	47262	42197	37661	33554	5
6	2.38021	1.33882	1.05799	88885	76743	67264	59488	52895	47173	42117	37589	33489	6
7	2.31327	1.33229	1.05456	88652	76567	67123	59370	52794	47083	42038	37518	33424	7
8	2.25527	1.32585	1.05115	88421	76391	66981	59252	52692	46994	41958	37446	33359	8
9	2.20412	1.31951	1.04777	88190	76216	66841	59134	52591	46905	41879	37375	33294	9
10	2.15836	1.31327	1.04442	87951	76042	66700	59016	52490	46817	41800	37303	33229	10
11	2.11697	1.30711	1.04109	87733	75869	66560	58899	52389	46728	41721	37232	33164	11
12	2.07918	1.30103	1.03779	87506	75696	66421	58782	52288	46640	41642	37161	33099	12
13	2.04442	1.29504	1.03451	87281	75524	66282	58665	52188	46552	41564	37090	33035	13
14	2.01224	1.28913	1.03126	87056	75353	66143	58549	52087	46464	41485	37020	32970	14
15	1.98227	1.28330	1.02803	86833	75182	66005	58433	51987	46376	41407	36949	32906	15
16	1.95424	1.27751	1.02482	86611	75012	65868	58318	51888	46288	41329	36878	32842	16
17	1.92791	1.27187	1.02164	86390	74843	65730	58202	51788	46201	41251	36808	32778	17
18	1.90309	1.26627	1.01848	86170	74674	65594	58087	51689	46113	41173	36738	32713	18
19	1.87961	1.26074	1.01535	85951	74506	65457	57972	51590	46026	41095	36667	32649	19
20	1.85733	1.25527	1.01224	85733	74339	65321	57858	51491	45939	41018	36597	32585	20
21	1.83614	1.24988	1.00914	85517	74172	65186	57744	51393	45853	40940	36527	32522	21
22	1.81594	1.24455	1.00608	85301	74006	65051	57630	51294	45766	40863	36457	32458	22
23	1.79664	1.23929	1.00303	85087	73841	64916	57516	51196	45680	40786	36386	32394	23
24	1.77815	1.23408	1.00000	84873	73676	64782	57403	51098	45593	40709	36318	32331	24
25	1.76042	1.22894	.99700	84661	73512	64648	57290	51000	45507	40632	36248	32267	25
26	1.74339	1.22387	.99401	84450	73348	64515	57178	50903	45421	40555	36179	32204	26
27	1.72700	1.21884	.99105	84239	73185	64382	57065	50806	45336	40478	36110	32141	27
28	1.71121	1.21388	.98810	84030	73023	64249	56953	50709	45250	40402	36040	32078	28
29	1.69597	1.20897	.98518	83822	72861	64117	56841	50612	45165	40325	35971	32014	29
30	1.68124	1.20412	.98227	83614	72700	63985	56730	50515	45079	40249	35902	31951	30
31	1.66700	1.19932	.97939	83408	72539	63854	56619	50419	44994	40173	35833	31889	31
32	1.65321	1.19458	.97652	83203	72379	63723	56508	50323	44909	40097	35765	31826	32
33	1.63985	1.18988	.97367	82998	72220	63592	56397	50227	44825	40021	35696	31763	33
34	1.62688	1.18524	.97084	82795	72061	63462	56287	50131	44740	39945	35627	31700	34
35	1.61430	1.18064	.96803	82593	71903	63332	56177	50035	44656	39870	35559	31638	35
36	1.60206	1.17609	.96524	82391	71745	63202	56067	49940	44571	39794	35491	31575	36
37	1.59016	1.17159	.96246	82190	71588	63073	55957	49845	44487	39719	35422	31513	37
38	1.57858	1.16714	.95971	81991	71432	62945	55848	49750	44403	39644	35354	31451	38
39	1.56730	1.16273	.95697	81792	71276	62816	55739	49655	44320	39569	35286	31389	39
40	1.55630	1.15836	.95424	81594	71121	62688	55630	49561	44236	39494	35218	31327	40
41	1.54558	1.15404	.95154	81397	70966	62561	55522	49466	44153	39419	35151	31265	41
42	1.53511	1.14976	.94885	81201	70811	62434	55414	49372	44069	39344	35083	31203	42
43	1.52490	1.14554	.94618	81006	70658	62307	55306	49278	43986	39270	35015	31141	43
44	1.51491	1.14133	.94352	80812	70505	62181	55198	49185	43903	39195	34948	31079	44
45	1.50515	1.13717	.94088	80618	70352	62054	55091	49091	43820	39121	34880	31017	45
46	1.49561	1.13306	.93826	80426	70200	61929	54984	48998	43738	39047	34813	30956	46
47	1.48627	1.12898	.93565	80234	70048	61803	54877	48905	43655	38973	34746	30894	47
48	1.47712	1.12494	.93305	80043	69897	61678	54770	48812	43573	38899	34679	30833	48
49	1.46817	1.12094	.93048	79851	69747	61554	54664	48719	43491	38825	34612	30772	49
50	1.45939	1.11697	.92791	79664	69597	61430	54558	48627	43409	38751	34545	30711	50
51	1.45079	1.11304	.92537	79475	69447	61306	54452	48534	43327	38678	34478	30649	51
52	1.44236	1.10915	.92284	79288	69298	61182	54347	48442	43245	38604	34412	30588	52
53	1.43409	1.10529	.92032	79101	69150	61059	54241	48350	43164	38531	34345	30527	53
54	1.42597	1.10146	.91781	78915	69002	60936	54136	48259	43082	38458	34279	30467	54
55	1.41800	1.09767	.91533	78730	68854	60814	54032	48167	43001	38385	34212	30406	55
56	1.41018	1.09391	.91285	78545	68707	60691	53927	48076	42920	38312	34146	30345	56
57	1.40249	1.09018	.91039	78362	68561	60570	53823	47985	42839	38239	34080	30284	57
58	1.39494	1.08648	.90794	78179	68415	60448	53719	47894	42758	38166	34014	30224	58
59	1.38751	1.08282	.90551	77997	68269	60327	53615	47803	42677	38094	33948	30164	59

0° or 0°.		PROP. LOGARITHMS. (r.)							0° or 0°.	
"	0'	1'	2'	3'	4'	5'	6'	7'	"	
0		2.25527	1.95424	1.77815	1.65321	1.55630	1.47712	1.41017	0	
1	4.03342	2.24809	1.95064	1.77575	1.65141	1.55486	1.47592	1.40914	1	
2	3.73239	2.24103	1.94706	1.77335	1.64961	1.55342	1.47472	1.40811	2	
3	3.55630	2.23408	1.94352	1.77097	1.64782	1.55198	1.47352	1.40708	3	
4	3.43136	2.22724	1.94000	1.76861	1.64603	1.55055	1.47232	1.40606	4	
5	3.33445	2.22051	1.93651	1.76625	1.64426	1.54912	1.47113	1.40503	5	
6	3.25527	2.21388	1.93306	1.76391	1.64249	1.54770	1.46994	1.40401	6	
7	3.18833	2.20735	1.92962	1.76158	1.64073	1.54629	1.46876	1.40300	7	
8	3.13633	2.20091	1.92621	1.75927	1.63897	1.54487	1.46758	1.40198	8	
9	3.07918	2.19457	1.92283	1.75696	1.63722	1.54347	1.46640	1.40097	9	
10	3.03342	2.18833	1.91948	1.75467	1.63548	1.54206	1.46522	1.39996	10	
11	2.99203	2.18217	1.91615	1.75239	1.63375	1.54066	1.46405	1.39895	11	
12	2.95424	2.17609	1.91285	1.75012	1.63202	1.53927	1.46288	1.39794	12	
13	2.91948	2.17010	1.90957	1.74787	1.63030	1.53788	1.46171	1.39693	13	
14	2.88730	2.16419	1.90632	1.74562	1.62859	1.53649	1.46055	1.39593	14	
15	2.85733	2.15836	1.90309	1.74339	1.62688	1.53511	1.45939	1.39493	15	
16	2.82930	2.15261	1.89988	1.74117	1.62518	1.53374	1.45824	1.39394	16	
17	2.80297	2.14693	1.89670	1.73896	1.62349	1.53236	1.45708	1.39294	17	
18	2.77815	2.14133	1.89354	1.73676	1.62180	1.53100	1.45593	1.39195	18	
19	2.75467	2.13580	1.89041	1.73457	1.62012	1.52963	1.45478	1.39096	19	
20	2.73239	2.13033	1.88730	1.73239	1.61845	1.52827	1.45364	1.38997	20	
21	2.71120	2.12494	1.88420	1.73023	1.61678	1.52692	1.45250	1.38899	21	
22	2.69100	2.11961	1.88114	1.72807	1.61512	1.52557	1.45136	1.38800	22	
23	2.67170	2.11435	1.87809	1.72593	1.61347	1.52422	1.45022	1.38702	23	
24	2.65321	2.10914	1.87506	1.72379	1.61182	1.52288	1.44909	1.38604	24	
25	2.63548	2.10400	1.87206	1.72167	1.61018	1.52154	1.44796	1.38506	25	
26	2.61845	2.09893	1.86907	1.71956	1.60854	1.52021	1.44684	1.38409	26	
27	2.60206	2.09390	1.86611	1.71745	1.60691	1.51888	1.44571	1.38312	27	
28	2.58627	2.08894	1.86346	1.71536	1.60529	1.51755	1.44459	1.38215	28	
29	2.57103	2.08403	1.86024	1.71328	1.60367	1.51623	1.44347	1.38118	29	
30	2.55630	2.07918	1.85733	1.71120	1.60206	1.51491	1.44236	1.38021	30	
31	2.54206	2.07438	1.85445	1.70914	1.60045	1.51360	1.44125	1.37925	31	
32	2.52827	2.06964	1.85158	1.70709	1.59885	1.51229	1.44014	1.37829	32	
33	2.51491	2.06494	1.84873	1.70504	1.59726	1.51098	1.43903	1.37733	33	
34	2.50194	2.06030	1.84590	1.70301	1.59567	1.50968	1.43793	1.37637	34	
35	2.48936	2.05570	1.84309	1.70099	1.59409	1.50838	1.43683	1.37541	35	
36	2.47712	2.05115	1.84030	1.69897	1.59251	1.50708	1.43573	1.37446	36	
37	2.46522	2.04665	1.83752	1.69696	1.59094	1.50579	1.43463	1.37351	37	
38	2.45364	2.04220	1.83477	1.69497	1.58938	1.50451	1.43354	1.37256	38	
39	2.44236	2.03779	1.83203	1.69298	1.58782	1.50322	1.43245	1.37161	39	
40	2.43136	2.03342	1.82930	1.69100	1.58627	1.50194	1.43136	1.37067	40	
41	2.42064	2.02910	1.82660	1.68903	1.58472	1.50067	1.43028	1.36972	41	
42	2.41017	2.02482	1.82391	1.68707	1.58317	1.49940	1.42920	1.36878	42	
43	2.39996	2.02060	1.82124	1.68512	1.58164	1.49813	1.42812	1.36784	43	
44	2.38997	2.01639	1.81858	1.68318	1.58011	1.49687	1.42704	1.36691	44	
45	2.38021	2.01223	1.81594	1.68124	1.57858	1.49560	1.42597	1.36597	45	
46	2.37067	2.00812	1.81332	1.67932	1.57706	1.49435	1.42490	1.36504	46	
47	2.36133	2.00404	1.81071	1.67740	1.57554	1.49309	1.42383	1.36411	47	
48	2.35218	2.00000	1.80811	1.67549	1.57403	1.49184	1.42276	1.36318	48	
49	2.34323	1.99600	1.80554	1.67359	1.57253	1.49060	1.42170	1.36225	49	
50	2.33445	1.99203	1.80297	1.67170	1.57103	1.48936	1.42064	1.36133	50	
51	2.32585	1.98810	1.80043	1.66981	1.56953	1.48812	1.41958	1.36040	51	
52	2.31742	1.98421	1.79790	1.66794	1.56804	1.48688	1.41853	1.35948	52	
53	2.30915	1.98035	1.79539	1.66607	1.56656	1.48565	1.41747	1.35856	53	
54	2.30103	1.97652	1.79287	1.66421	1.56508	1.48442	1.41642	1.35765	54	
55	2.29300	1.97273	1.79039	1.66236	1.56360	1.48320	1.41538	1.35673	55	
56	2.28524	1.96897	1.78791	1.66051	1.56213	1.48197	1.41433	1.35582	56	
57	2.27755	1.96524	1.78545	1.65868	1.56067	1.48076	1.41329	1.35491	57	
58	2.27000	1.96154	1.78300	1.65685	1.55921	1.47954	1.41225	1.35400	58	
59	2.26257	1.95788	1.78057	1.65503	1.55775	1.47833	1.41121	1.35309	59	

0° or 0'		PROP. LOGARITHMS. (r.)								0° or 0'	
"	8'	9	10'	11'	12	13'	14'	15'	"		
0	1.35218	1.30103	1.25527	1.21388	1.17609	1.14133	1.10914	1.07918	0		
1	1.35128	1.30023	1.25456	1.21322	1.17549	1.14077	1.10863	1.07870	1		
2	1.35038	1.29942	1.25383	1.21257	1.17489	1.14022	1.10811	1.07822	2		
3	1.34948	1.29862	1.25311	1.21191	1.17429	1.13966	1.10760	1.07774	3		
4	1.34858	1.29782	1.25239	1.21126	1.17369	1.13911	1.10708	1.07726	4		
5	1.34768	1.29701	1.25167	1.21060	1.17309	1.13855	1.10657	1.07678	5		
6	1.34679	1.29623	1.25095	1.20995	1.17249	1.13800	1.10605	1.07630	6		
7	1.34589	1.29544	1.25024	1.20930	1.17189	1.13745	1.10554	1.07582	7		
8	1.34500	1.29464	1.24952	1.20865	1.17129	1.13690	1.10503	1.07534	8		
9	1.34411	1.29385	1.24881	1.20800	1.17070	1.13635	1.10452	1.07486	9		
10	1.34323	1.29306	1.24809	1.20735	1.17010	1.13580	1.10406	1.07438	10		
11	1.34234	1.29227	1.24738	1.20670	1.16951	1.13525	1.10349	1.07391	11		
12	1.34146	1.29148	1.24667	1.20605	1.16891	1.13470	1.10298	1.07343	12		
13	1.34058	1.29070	1.24596	1.20541	1.16832	1.13415	1.10247	1.07295	13		
14	1.33970	1.28991	1.24526	1.20476	1.16773	1.13360	1.10197	1.07248	14		
15	1.33882	1.28913	1.24455	1.20412	1.16714	1.13306	1.10146	1.07200	15		
16	1.33794	1.28835	1.24384	1.20348	1.16655	1.13251	1.10095	1.07153	16		
17	1.33707	1.28757	1.24314	1.20284	1.16596	1.13197	1.10044	1.07106	17		
18	1.33619	1.28679	1.24244	1.20219	1.16537	1.13142	1.09994	1.07058	18		
19	1.33532	1.28601	1.24173	1.20155	1.16478	1.13088	1.09943	1.07011	19		
20	1.33445	1.28524	1.24103	1.20091	1.16419	1.13033	1.09893	1.06964	20		
21	1.33359	1.28446	1.24033	1.20028	1.16361	1.12979	1.09842	1.06916	21		
22	1.33272	1.28369	1.23963	1.19964	1.16302	1.12925	1.09792	1.06869	22		
23	1.33186	1.28292	1.23894	1.19900	1.16243	1.12871	1.09741	1.06822	23		
24	1.33099	1.28215	1.23824	1.19837	1.16185	1.12817	1.09691	1.06775	24		
25	1.33013	1.28138	1.23754	1.19773	1.16127	1.12763	1.09641	1.06728	25		
26	1.32927	1.28061	1.23685	1.19710	1.16068	1.12709	1.09591	1.06681	26		
27	1.32842	1.27984	1.23616	1.19647	1.16010	1.12655	1.09540	1.06634	27		
28	1.32756	1.27908	1.23546	1.19584	1.15952	1.12601	1.09490	1.06588	28		
29	1.32671	1.27831	1.23477	1.19520	1.15894	1.12548	1.09440	1.06541	29		
30	1.32585	1.27755	1.23408	1.19457	1.15836	1.12494	1.09390	1.06494	30		
31	1.32500	1.27679	1.23339	1.19395	1.15778	1.12440	1.09341	1.06447	31		
32	1.32415	1.27603	1.23271	1.19332	1.15721	1.12387	1.09291	1.06401	32		
33	1.32331	1.27527	1.23202	1.19269	1.15663	1.12333	1.09241	1.06354	33		
34	1.32246	1.27451	1.23133	1.19206	1.15605	1.12280	1.09191	1.06308	34		
35	1.32162	1.27376	1.23065	1.19144	1.15548	1.12227	1.09142	1.06261	35		
36	1.32077	1.27300	1.22997	1.19081	1.15490	1.12173	1.09092	1.06215	36		
37	1.31993	1.27225	1.22928	1.19019	1.15433	1.12120	1.09042	1.06168	37		
38	1.31909	1.27150	1.22860	1.18957	1.15375	1.12067	1.08993	1.06122	38		
39	1.31826	1.27075	1.22792	1.18895	1.15318	1.12014	1.08943	1.06076	39		
40	1.31742	1.27000	1.22724	1.18833	1.15261	1.11961	1.08894	1.06030	40		
41	1.31659	1.26925	1.22657	1.18771	1.15204	1.11908	1.08845	1.05983	41		
42	1.31575	1.26850	1.22589	1.18709	1.15147	1.11855	1.08796	1.05937	42		
43	1.31492	1.26776	1.22521	1.18647	1.15090	1.11802	1.08746	1.05891	43		
44	1.31409	1.26701	1.22454	1.18585	1.15033	1.11750	1.08697	1.05845	44		
45	1.31326	1.26627	1.22386	1.18523	1.14976	1.11697	1.08648	1.05799	45		
46	1.31244	1.26553	1.22319	1.18462	1.14919	1.11644	1.08599	1.05753	46		
47	1.31161	1.26479	1.22252	1.18400	1.14863	1.11592	1.08550	1.05707	47		
48	1.31079	1.26405	1.22185	1.18339	1.14806	1.11539	1.08501	1.05662	48		
49	1.30997	1.26331	1.22118	1.18278	1.14750	1.11487	1.08452	1.05616	49		
50	1.30915	1.26257	1.22051	1.18217	1.14693	1.11435	1.08403	1.05570	50		
51	1.30833	1.26184	1.21984	1.18155	1.14637	1.11382	1.08355	1.05524	51		
52	1.30751	1.26110	1.21918	1.18094	1.14581	1.11330	1.08306	1.05479	52		
53	1.30670	1.26037	1.21851	1.18033	1.14524	1.11278	1.08257	1.05433	53		
54	1.30588	1.25964	1.21785	1.17973	1.14468	1.11226	1.08209	1.05388	54		
55	1.30507	1.25891	1.21718	1.17912	1.14412	1.11174	1.08160	1.05342	55		
56	1.30426	1.25818	1.21652	1.17851	1.14356	1.11122	1.08112	1.05297	56		
57	1.30345	1.25745	1.21586	1.17790	1.14300	1.11070	1.08063	1.05251	57		
58	1.30264	1.25672	1.21520	1.17730	1.14244	1.11018	1.08015	1.05206	58		
59	1.30183	1.25600	1.21454	1.17669	1.14189	1.10966	1.07966	1.05161	59		

0° or 0'		PROP. LOGARITHMS. (r.)										0° or 0'	
#	16'	17'	18'	19'	20'	21'	22'	23'	24'	25'	26'	#	
0	1.05115	1.02482	1.00000	.97652	.95424	.93305	.91285	.89354	.87506			0	
1	1.05070	1.02440	.99960	.97614	.95388	.93271	.91252	.89323	.87476			1	
2	1.05025	1.02397	.99920	.97576	.95352	.93236	.91219	.89292	.87446			2	
3	1.04980	1.02355	.99880	.97538	.95316	.93202	.91186	.89250	.87416			3	
4	1.04935	1.02312	.99839	.97500	.95280	.93168	.91154	.89229	.87386			4	
5	1.04890	1.02270	.99799	.97462	.95244	.93133	.91121	.89197	.87356			5	
6	1.04845	1.02228	.99759	.97424	.95208	.93099	.91088	.89166	.87326			6	
7	1.04800	1.02185	.99719	.97386	.95172	.93065	.91055	.89135	.87296			7	
8	1.04755	1.02143	.99679	.97348	.95136	.93030	.91023	.89103	.87266			8	
9	1.04710	1.02101	.99640	.97310	.95100	.92996	.90990	.89072	.87236			9	
10	1.04665	1.02059	.99600	.97273	.95064	.92962	.90957	.89041	.87206			10	
11	1.04620	1.02017	.99560	.97235	.95028	.92928	.90925	.89010	.87176			11	
12	1.04576	1.01974	.99520	.97197	.94992	.92894	.90892	.88978	.87146			12	
13	1.04531	1.01932	.99480	.97159	.94956	.92860	.90860	.88947	.87116			13	
14	1.04486	1.01890	.99441	.97122	.94921	.92825	.90827	.88916	.87086			14	
15	1.04442	1.01848	.99401	.97084	.94885	.92791	.90794	.88885	.87056			15	
16	1.04397	1.01806	.99361	.97047	.94849	.92757	.90762	.88854	.87026			16	
17	1.04353	1.01764	.99322	.97009	.94813	.92723	.90729	.88823	.86996			17	
18	1.04308	1.01723	.99282	.96972	.94778	.92689	.90697	.88792	.86967			18	
19	1.04264	1.01681	.99243	.96934	.94742	.92655	.90664	.88761	.86937			19	
20	1.04220	1.01639	.99203	.96896	.94706	.92621	.90632	.88730	.86907			20	
21	1.04175	1.01597	.99164	.96859	.94671	.92587	.90599	.88699	.86877			21	
22	1.04131	1.01556	.99124	.96822	.94635	.92554	.90567	.88668	.86848			22	
23	1.04087	1.01514	.99085	.96784	.94600	.92520	.90535	.88637	.86818			23	
24	1.04043	1.01472	.99045	.96747	.94564	.92486	.90502	.88606	.86788			24	
25	1.03999	1.01431	.99006	.96710	.94529	.92452	.90470	.88575	.86759			25	
26	1.03955	1.01389	.98967	.96673	.94493	.92418	.90438	.88544	.86729			26	
27	1.03911	1.01348	.98928	.96635	.94458	.92385	.90406	.88513	.86699			27	
28	1.03867	1.01306	.98888	.96598	.94423	.92351	.90373	.88482	.86670			28	
29	1.03823	1.01265	.98849	.96561	.94387	.92317	.90341	.88451	.86640			29	
30	1.03779	1.01223	.98810	.96524	.94352	.92283	.90309	.88420	.86611			30	
31	1.03735	1.01182	.98771	.96487	.94317	.92250	.90277	.88390	.86581			31	
32	1.03691	1.01141	.98732	.96450	.94281	.92216	.90245	.88359	.86552			32	
33	1.03647	1.01100	.98693	.96413	.94246	.92183	.90213	.88328	.86522			33	
34	1.03604	1.01058	.98654	.96376	.94211	.92149	.90181	.88297	.86493			34	
35	1.03560	1.01017	.98615	.96339	.94176	.92115	.90148	.88267	.86463			35	
36	1.03516	1.00976	.98576	.96302	.94141	.92082	.90116	.88236	.86434			36	
37	1.03473	1.00935	.98537	.96265	.94105	.92048	.90084	.88205	.86404			37	
38	1.03429	1.00894	.98498	.96228	.94070	.92015	.90052	.88175	.86375			38	
39	1.03386	1.00853	.98459	.96191	.94035	.91981	.90020	.88144	.86346			39	
40	1.03342	1.00812	.98421	.96154	.94000	.91948	.89988	.88114	.86316			40	
41	1.03299	1.00771	.98382	.96117	.93965	.91915	.89957	.88083	.86287			41	
42	1.03256	1.00730	.98343	.96081	.93930	.91881	.89925	.88052	.86258			42	
43	1.03212	1.00689	.98304	.96044	.93895	.91848	.89893	.88023	.86228			43	
44	1.03169	1.00648	.98266	.96007	.93860	.91815	.89861	.87991	.86199			44	
45	1.03126	1.00607	.98227	.95971	.93825	.91781	.89829	.87961	.86170			45	
46	1.03083	1.00567	.98189	.95934	.93791	.91748	.89797	.87930	.86140			46	
47	1.03039	1.00526	.98150	.95897	.93756	.91715	.89766	.87900	.86111			47	
48	1.02996	1.00485	.98111	.95861	.93721	.91682	.89734	.87870	.86082			48	
49	1.02953	1.00445	.98073	.95824	.93686	.91648	.89702	.87839	.86053			49	
50	1.02910	1.00404	.98035	.95788	.93651	.91615	.89670	.87809	.86024			50	
51	1.02867	1.00363	.97996	.95751	.93617	.91582	.89639	.87779	.85995			51	
52	1.02824	1.00323	.97958	.95715	.93582	.91549	.89607	.87748	.85965			52	
53	1.02781	1.00282	.97919	.95678	.93547	.91516	.89575	.87718	.85936			53	
54	1.02739	1.00242	.97881	.95642	.93513	.91483	.89544	.87687	.85907			54	
55	1.02696	1.00202	.97843	.95606	.93479	.91450	.89512	.87657	.85878			55	
56	1.02653	1.00161	.97805	.95569	.93443	.91417	.89481	.87627	.85849			56	
57	1.02610	1.00121	.97766	.95533	.93409	.91384	.89449	.87597	.85820			57	
58	1.02568	1.00080	.97728	.95497	.93374	.91351	.89417	.87566	.85791			58	
59	1.02525	1.00040	.97690	.95460	.93340	.91318	.89386	.87536	.85762			59	

0° or 0'		PROP. LOGARITHMS. (r.)								0° or 0'	
"	25'	26'	27'	28'	29'	30'	31'	32'	33'	"	
0	.85733	.84030	.82391	.80811	.79287	.77815	.76391	.75012	.73676	0	
1	.85704	.84002	.82364	.80786	.79262	.77791	.76368	.74990	.73654	1	
2	.85675	.83974	.82337	.80760	.79238	.77767	.76344	.74967	.73632	2	
3	.85646	.83946	.82311	.80734	.79213	.77743	.76321	.74944	.73610	3	
4	.85618	.83919	.82284	.80708	.79188	.77719	.76298	.74922	.73588	4	
5	.85589	.83891	.82257	.80683	.79163	.77695	.76274	.74899	.73565	5	
6	.85560	.83863	.82230	.80657	.79138	.77671	.76251	.74877	.73544	6	
7	.85531	.83835	.82204	.80631	.79113	.77647	.76228	.74854	.73523	7	
8	.85502	.83808	.82177	.80605	.79088	.77623	.76203	.74832	.73501	8	
9	.85473	.83780	.82150	.80579	.79063	.77599	.76181	.74809	.73479	9	
10	.85445	.83752	.82124	.80554	.79039	.77575	.76158	.74787	.73457	10	
11	.85416	.83725	.82097	.80528	.79014	.77551	.76135	.74764	.73435	11	
12	.85387	.83697	.82070	.80502	.78989	.77527	.76112	.74742	.73413	12	
13	.85358	.83670	.82044	.80477	.78964	.77503	.76089	.74719	.73392	13	
14	.85330	.83642	.82017	.80451	.78939	.77479	.76065	.74697	.73370	14	
15	.85301	.83614	.81991	.80425	.78915	.77455	.76042	.74674	.73348	15	
16	.85272	.83587	.81964	.80400	.78890	.77431	.76019	.74652	.73326	16	
17	.85244	.83559	.81938	.80374	.78865	.77407	.75996	.74629	.73305	17	
18	.85215	.83532	.81911	.80349	.78840	.77383	.75973	.74607	.73283	18	
19	.85187	.83504	.81884	.80323	.78816	.77359	.75950	.74583	.73261	19	
20	.85158	.83477	.81858	.80297	.78791	.77335	.75927	.74562	.73239	20	
21	.85129	.83449	.81832	.80272	.78766	.77311	.75903	.74540	.73218	21	
22	.85101	.83422	.81805	.80246	.78742	.77288	.75880	.74517	.73196	22	
23	.85072	.83394	.81779	.80221	.78717	.77264	.75857	.74495	.73174	23	
24	.85044	.83367	.81752	.80195	.78693	.77240	.75834	.74473	.73153	24	
25	.85015	.83339	.81726	.80170	.78668	.77216	.75811	.74450	.73131	25	
26	.84987	.83312	.81699	.80144	.78643	.77192	.75788	.74428	.73109	26	
27	.84958	.83285	.81673	.80119	.78619	.77169	.75765	.74406	.73088	27	
28	.84930	.83257	.81647	.80094	.78594	.77145	.75742	.74383	.73066	28	
29	.84902	.83230	.81620	.80068	.78570	.77121	.75719	.74361	.73044	29	
30	.84873	.83203	.81594	.80043	.78545	.77097	.75696	.74339	.73023	30	
31	.84845	.83175	.81568	.80017	.78521	.77074	.75673	.74317	.73001	31	
32	.84816	.83148	.81541	.79992	.78496	.77050	.75650	.74294	.72980	32	
33	.84788	.83121	.81515	.79967	.78472	.77026	.75627	.74272	.72958	33	
34	.84760	.83094	.81489	.79941	.78447	.77002	.75604	.74250	.72936	34	
35	.84732	.83066	.81463	.79916	.78423	.76979	.75581	.74228	.72915	35	
36	.84703	.83039	.81436	.79891	.78398	.76955	.75559	.74205	.72893	36	
37	.84675	.83012	.81410	.79865	.78374	.76931	.75536	.74183	.72872	37	
38	.84647	.82985	.81384	.79840	.78349	.76908	.75513	.74161	.72850	38	
39	.84619	.82958	.81358	.79815	.78325	.76884	.75490	.74139	.72829	39	
40	.84590	.82930	.81332	.79790	.78300	.76861	.75467	.74117	.72807	40	
41	.84562	.82903	.81305	.79764	.78276	.76837	.75444	.74095	.72786	41	
42	.84534	.82876	.81279	.79739	.78252	.76813	.75421	.74072	.72764	42	
43	.84506	.82849	.81253	.79714	.78227	.76790	.75398	.74050	.72743	43	
44	.84478	.82822	.81227	.79689	.78203	.76766	.75376	.74028	.72721	44	
45	.84450	.82795	.81201	.79663	.78179	.76743	.75353	.74006	.72700	45	
46	.84421	.82768	.81175	.79638	.78154	.76719	.75330	.73984	.72678	46	
47	.84393	.82741	.81149	.79613	.78130	.76696	.75307	.73962	.72657	47	
48	.84365	.82714	.81123	.79588	.78106	.76672	.75285	.73940	.72636	48	
49	.84337	.82687	.81097	.79563	.78081	.76649	.75262	.73918	.72614	49	
50	.84309	.82660	.81071	.79538	.78057	.76625	.75239	.73896	.72593	50	
51	.84281	.82633	.81045	.79513	.78033	.76602	.75216	.73874	.72571	51	
52	.84253	.82606	.81019	.79488	.78009	.76578	.75194	.73852	.72550	52	
53	.84225	.82579	.80993	.79463	.77984	.76555	.75171	.73830	.72529	53	
54	.84197	.82552	.80967	.79437	.77960	.76531	.75148	.73808	.72507	54	
55	.84169	.82525	.80941	.79412	.77936	.76508	.75126	.73786	.72486	55	
56	.84141	.82498	.80915	.79387	.77912	.76485	.75103	.73764	.72465	56	
57	.84114	.82471	.80889	.79362	.77888	.76461	.75080	.73742	.72443	57	
58	.84086	.82445	.80863	.79337	.77863	.76438	.75058	.73720	.72422	58	
59	.84058	.82418	.80837	.79312	.77839	.76414	.75035	.73698	.72401	59	

Greenwich Date Logarithm for the SUN. (q.)

Min	12 ^h	13 ^h	14 ^h	15 ^h	16 ^h	17 ^h	18 ^h	19 ^h	20 ^h	21 ^h	22 ^h	23 ^h	Min
0	30103	.26627	.23408	.20412	.17609	.14976	.12494	.10146	.07918	.05799	.03779	.01848	0
1	30043	.26571	.23357	.20364	.17564	.14934	.12454	.10108	.07882	.05765	.03746	.01817	1
2	29983	.26516	.23305	.20316	.17519	.14891	.12414	.10070	.07846	.05730	.03713	.01786	2
3	29923	.26460	.23254	.20268	.17474	.14849	.12374	.10032	.07810	.05696	.03680	.01754	3
4	29863	.26405	.23202	.20220	.17429	.14806	.12333	.09994	.07774	.05662	.03648	.01723	4
5	29803	.26349	.23151	.20172	.17384	.14764	.12293	.09956	.07736	.05627	.03615	.01691	5
6	29743	.26294	.23099	.20124	.17339	.14722	.12253	.09918	.07702	.05593	.03582	.01666	6
7	29683	.26239	.23048	.20076	.17294	.14679	.12213	.09880	.07666	.05559	.03549	.01629	7
8	29623	.26184	.22997	.20029	.17249	.14637	.12173	.09842	.07630	.05524	.03517	.01597	8
9	29564	.26129	.22946	.19980	.17204	.14595	.12134	.09804	.07594	.05490	.03484	.01566	9
10	29504	.26074	.22894	.19932	.17159	.14553	.12094	.09767	.07558	.05456	.03451	.01535	10
11	29445	.26019	.22843	.19885	.17114	.14511	.12054	.09729	.07522	.05422	.03419	.01504	11
12	29385	.25964	.22792	.19837	.17070	.14468	.12014	.09691	.07486	.05388	.03386	.01472	12
13	29326	.25909	.22741	.19789	.17025	.14426	.11974	.09653	.07450	.05354	.03353	.01441	13
14	29267	.25854	.22691	.19742	.16980	.14384	.11935	.09616	.07415	.05319	.03321	.01410	14
15	29208	.25800	.22640	.19694	.16936	.14342	.11895	.09578	.07379	.05285	.03289	.01379	15
16	29149	.25745	.22589	.19647	.16891	.14300	.11855	.09541	.07343	.05251	.03256	.01348	16
17	29090	.25691	.22538	.19599	.16847	.14258	.11816	.09503	.07307	.05217	.03223	.01317	17
18	29031	.25636	.22488	.19552	.16802	.14217	.11776	.09466	.07272	.05183	.03191	.01286	18
19	28972	.25582	.22437	.19505	.16758	.14175	.11737	.09428	.07236	.05149	.03158	.01255	19
20	28913	.25527	.22387	.19458	.16714	.14133	.11697	.09391	.07200	.05115	.03126	.01224	20
21	28855	.25473	.22336	.19410	.16669	.14091	.11658	.09353	.07165	.05081	.03093	.01193	21
22	28796	.25419	.22285	.19363	.16625	.14050	.11618	.09316	.07129	.05048	.03061	.01182	22
23	28737	.25365	.22235	.19316	.16581	.14008	.11579	.09278	.07094	.05014	.03029	.01131	23
24	28679	.25311	.22185	.19269	.16537	.13966	.11539	.09241	.07058	.04980	.02996	.01100	24
25	28621	.25257	.22135	.19223	.16493	.13925	.11500	.09204	.07023	.04946	.02964	.01069	25
26	28562	.25203	.22085	.19175	.16449	.13883	.11461	.09167	.06987	.04912	.02932	.01038	26
27	28504	.25149	.22034	.19128	.16405	.13842	.11422	.09129	.06952	.04879	.02900	.01007	27
28	28446	.25095	.21984	.19082	.16361	.13800	.11382	.09092	.06917	.04845	.02867	.00976	28
29	28388	.25042	.21934	.19035	.16317	.13759	.11343	.09055	.06881	.04811	.02835	.00945	29
30	28330	.24988	.21884	.18988	.16273	.13717	.11304	.09018	.06846	.04777	.02803	.00914	30
31	28272	.24934	.21835	.18941	.16229	.13676	.11265	.08981	.06811	.04744	.02771	.00884	31
32	28215	.24881	.21785	.18895	.16185	.13635	.11226	.08944	.06775	.04710	.02739	.00853	32
33	28157	.24827	.21735	.18848	.16141	.13594	.11187	.08907	.06740	.04677	.02707	.00822	33
34	28099	.24774	.21685	.18802	.16098	.13552	.11148	.08870	.06705	.04643	.02675	.00791	34
35	28042	.24721	.21636	.18755	.16054	.13511	.11109	.08833	.06670	.04609	.02642	.00761	35
36	27984	.24667	.21586	.18709	.16010	.13470	.11070	.08796	.06635	.04576	.02610	.00730	36
37	27927	.24614	.21536	.18662	.15967	.13429	.11031	.08759	.06599	.04542	.02578	.00699	37
38	27869	.24561	.21487	.18616	.15923	.13388	.10992	.08722	.06564	.04509	.02546	.00669	38
39	27812	.24508	.21437	.18570	.15880	.13347	.10953	.08685	.06529	.04475	.02514	.00638	39
40	27755	.24455	.21388	.18524	.15836	.13306	.10915	.08648	.06494	.04442	.02482	.00608	40
41	27698	.24402	.21339	.18477	.15793	.13265	.10876	.08611	.06459	.04409	.02451	.00577	41
42	27641	.24349	.21290	.18431	.15750	.13224	.10837	.08575	.06424	.04375	.02419	.00546	42
43	27584	.24296	.21240	.18385	.15706	.13183	.10798	.08538	.06389	.04342	.02387	.00516	43
44	27527	.24244	.21191	.18339	.15663	.13142	.10760	.08501	.06354	.04309	.02355	.00485	44
45	27470	.24191	.21142	.18293	.15620	.13101	.10721	.08465	.06319	.04275	.02323	.00455	45
46	27413	.24138	.21093	.18247	.15577	.13061	.10683	.08428	.06285	.04242	.02291	.00424	46
47	27357	.24086	.21044	.18201	.15533	.13020	.10644	.08391	.06250	.04209	.02260	.00394	47
48	27300	.24033	.20995	.18156	.15490	.12979	.10605	.08355	.06215	.04176	.02228	.00364	48
49	27244	.23981	.20946	.18110	.15447	.12939	.10567	.08318	.06180	.04142	.02196	.00333	49
50	27187	.23929	.20897	.18064	.15404	.12898	.10529	.08282	.06145	.04109	.02164	.00303	50
51	27131	.23876	.20849	.18018	.15361	.12857	.10490	.08245	.06111	.04076	.02133	.00272	51
52	27075	.23824	.20800	.17973	.15318	.12817	.10452	.08209	.06076	.04043	.02101	.00242	52
53	27018	.23772	.20751	.17927	.15275	.12776	.10413	.08172	.06041	.04010	.02069	.00212	53
54	26962	.23720	.20703	.17882	.15233	.12736	.10375	.08136	.06007	.03977	.02038	.00181	54
55	26906	.23668	.20654	.17836	.15190	.12696	.10337	.08100	.05972	.03944	.02006	.00151	55
56	26850	.23616	.20606	.17791	.15147	.12655	.10299	.08064	.05937	.03911	.01975	.00121	56
57	26794	.23564	.20557	.17745	.15104	.12615	.10260	.08027	.05903	.03878	.01943	.00091	57
58	26738	.23512	.20509	.17700	.15062	.12574	.10222	.07991	.05868	.03845	.01911	.00060	58
59	26683	.23460	.20460	.17655	.15019	.12534	.10184	.07954	.05834	.03812	.01880	.00030	59

Prop. Logarithms for Seconds and Tenths of Seconds.

(99)

"	.0	.1	.2	.3	.4	.5	.6	.7	.8	.9
0		5.03342	4.73239	4.55630	4.43136	4.33445	4.25527	4.18833	4.13033	4.07918
1	4.03342	3.99203	3.95424	3.91948	3.88730	3.85733	3.82930	3.80297	3.77815	3.75467
2	3.73239	3.71120	3.69100	3.67170	3.65321	3.63548	3.61845	3.60206	3.58627	3.57103
3	3.55630	3.54206	3.52827	3.51491	3.50194	3.48936	3.47712	3.46522	3.45364	3.44236
4	3.43136	3.42064	3.41017	3.39996	3.38997	3.38021	3.37067	3.36133	3.35218	3.34323
5	3.33445	3.32585	3.31742	3.30915	3.30103	3.29306	3.28524	3.27755	3.27000	3.26257
6	3.25527	3.24809	3.24103	3.23408	3.22724	3.22051	3.21388	3.20735	3.20091	3.19457
7	3.18833	3.18217	3.17609	3.17010	3.16419	3.15836	3.15261	3.14693	3.14133	3.13580
8	3.13033	3.12494	3.11961	3.11435	3.10914	3.10400	3.09893	3.09390	3.08894	3.08403
9	3.07918	3.07438	3.06964	3.06494	3.06030	3.05570	3.05115	3.04665	3.04220	3.03779
10	3.03342	3.02910	3.02482	3.02060	3.01639	3.01223	3.00812	3.00404	3.00000	2.99600
11	2.99203	2.98810	2.98421	2.98035	2.97652	2.97273	2.96897	2.96524	2.96154	2.95788
12	2.95424	2.95064	2.94706	2.94352	2.94000	2.93651	2.93305	2.92962	2.92621	2.92283
13	2.91948	2.91615	2.91285	2.90957	2.90632	2.90309	2.89988	2.89670	2.89354	2.89041
14	2.88730	2.88420	2.88114	2.87809	2.87506	2.87206	2.86907	2.86611	2.86316	2.86024
15	2.85733	2.85445	2.85158	2.84873	2.84590	2.84309	2.84030	2.83752	2.83477	2.83203
16	2.82930	2.82660	2.82391	2.82124	2.81858	2.81594	2.81332	2.81071	2.80811	2.80554
17	2.80297	2.80043	2.79790	2.79538	2.79287	2.79039	2.78791	2.78545	2.78300	2.78057
18	2.77815	2.77575	2.77335	2.77097	2.76861	2.76625	2.76391	2.76158	2.75927	2.75696
19	2.75467	2.75239	2.75012	2.74787	2.74562	2.74339	2.74117	2.73896	2.73676	2.73457
20	2.73239	2.73023	2.72807	2.72593	2.72379	2.72167	2.71956	2.71745	2.71536	2.71329
21	2.71120	2.70914	2.70709	2.70504	2.70301	2.70099	2.69897	2.69696	2.69497	2.69298
22	2.69100	2.68903	2.68707	2.68512	2.68318	2.68124	2.67932	2.67740	2.67549	2.67359
23	2.67170	2.66981	2.66794	2.66607	2.66421	2.66236	2.66051	2.65868	2.65685	2.65502
24	2.65321	2.65141	2.64961	2.64782	2.64603	2.64426	2.64249	2.64073	2.63897	2.63722
25	2.63548	2.63375	2.63202	2.63030	2.62859	2.62688	2.62518	2.62349	2.62180	2.62012
26	2.61845	2.61678	2.61512	2.61347	2.61182	2.61018	2.60854	2.60691	2.60529	2.60367
27	2.60206	2.60045	2.59885	2.59726	2.59567	2.59409	2.59251	2.59094	2.58938	2.58782
28	2.58627	2.58472	2.58317	2.58164	2.58011	2.57858	2.57706	2.57554	2.57403	2.57253
29	2.57103	2.56953	2.56804	2.56656	2.56508	2.56360	2.56213	2.56067	2.55921	2.55775
30	2.55630	2.55486	2.55342	2.55198	2.55055	2.54912	2.54770	2.54629	2.54487	2.54347
31	2.54206	2.54066	2.53927	2.53788	2.53649	2.53511	2.53374	2.53236	2.53100	2.52963
32	2.52827	2.52692	2.52557	2.52422	2.52288	2.52154	2.52021	2.51888	2.51755	2.51623
33	2.51491	2.51360	2.51229	2.51098	2.50968	2.50838	2.50708	2.50579	2.50451	2.50322
34	2.50194	2.50067	2.49940	2.49813	2.49687	2.49560	2.49435	2.49309	2.49184	2.49060
35	2.48936	2.48812	2.48688	2.48565	2.48442	2.48320	2.48197	2.48076	2.47954	2.47833
36	2.47712	2.47592	2.47472	2.47352	2.47232	2.47113	2.46994	2.46876	2.46758	2.46640
37	2.46522	2.46405	2.46288	2.46171	2.46055	2.45939	2.45824	2.45708	2.45593	2.45478
38	2.45364	2.45250	2.45136	2.45022	2.44909	2.44796	2.44684	2.44571	2.44459	2.44347
39	2.44236	2.44125	2.44014	2.43903	2.43793	2.43683	2.43573	2.43463	2.43354	2.43245
40	2.43136	2.43028	2.42920	2.42812	2.42704	2.42597	2.42490	2.42383	2.42276	2.42170
41	2.42064	2.41958	2.41853	2.41747	2.41642	2.41538	2.41433	2.41329	2.41225	2.41121
42	2.41017	2.40914	2.40811	2.40708	2.40606	2.40503	2.40401	2.40300	2.40198	2.40097
43	2.39996	2.39895	2.39794	2.39694	2.39593	2.39493	2.39394	2.39294	2.39195	2.39096
44	2.38997	2.38899	2.38800	2.38702	2.38604	2.38506	2.38409	2.38312	2.38215	2.38118
45	2.38021	2.37925	2.37829	2.37733	2.37637	2.37541	2.37446	2.37351	2.37256	2.37161
46	2.37067	2.36972	2.36878	2.36784	2.36691	2.36597	2.36504	2.36411	2.36318	2.36225
47	2.36133	2.36040	2.35948	2.35856	2.35765	2.35673	2.35582	2.35491	2.35400	2.35309
48	2.35218	2.35128	2.35038	2.34948	2.34858	2.34768	2.34679	2.34589	2.34500	2.34411
49	2.34323	2.34234	2.34146	2.34058	2.33970	2.33882	2.33794	2.33707	2.33619	2.33532
50	2.33445	2.33359	2.33272	2.33186	2.33099	2.33013	2.32927	2.32842	2.32756	2.32671
51	2.32585	2.32500	2.32415	2.32331	2.32246	2.32162	2.32077	2.31993	2.31909	2.31826
52	2.31742	2.31659	2.31575	2.31492	2.31409	2.31326	2.31244	2.31161	2.31079	2.30997
53	2.30915	2.30833	2.30751	2.30670	2.30588	2.30507	2.30426	2.30345	2.30264	2.30183
54	2.30103	2.30023	2.29942	2.29862	2.29782	2.29703	2.29623	2.29544	2.29464	2.29385
55	2.29306	2.29227	2.29148	2.29070	2.28991	2.28913	2.28835	2.28757	2.28679	2.28601
56	2.28524	2.28446	2.28369	2.28292	2.28215	2.28138	2.28061	2.27984	2.27908	2.27831
57	2.27755	2.27679	2.27603	2.27527	2.27451	2.27376	2.27300	2.27225	2.27150	2.27075
58	2.27000	2.26925	2.26850	2.26776	2.26701	2.26627	2.26553	2.26479	2.26405	2.26331
59	2.26257	2.26184	2.26110	2.26037	2.25964	2.25891	2.25818	2.25745	2.25672	2.25600

0° or 0'		PROP. LOGARITHMS. (r.)								0° or 0'	
"	34'	35'	36'	37'	38'	39'	40'	41'	42'	#	
0	.72379	.71120	.69897	.68707	.67549	.66421	.65321	.64249	.63202	0	
1	.72358	.71100	.69877	.68688	.67530	.66402	.65303	.64231	.63185	1	
2	.72337	.71079	.69857	.68668	.67511	.66384	.65285	.64214	.63168	2	
3	.72316	.71058	.69837	.68648	.67492	.66365	.65267	.64196	.63151	3	
4	.72294	.71038	.69817	.68629	.67473	.66347	.65249	.64179	.63133	4	
5	.72273	.71017	.69797	.68609	.67454	.66328	.65231	.64161	.63116	5	
6	.72252	.70997	.69777	.68590	.67435	.66310	.65213	.64143	.63099	6	
7	.72231	.70976	.69756	.68570	.67416	.66291	.65195	.64125	.63082	7	
8	.72209	.70955	.69736	.68551	.67397	.66273	.65177	.64108	.63065	8	
9	.72188	.70935	.69716	.68531	.67378	.66254	.65159	.64090	.63047	9	
10	.72167	.70914	.69696	.68512	.67359	.66236	.65141	.64073	.63030	10	
11	.72146	.70894	.69676	.68492	.67340	.66217	.65123	.64055	.63013	11	
12	.72125	.70873	.69656	.68473	.67321	.66199	.65105	.64038	.62996	12	
13	.72103	.70852	.69636	.68454	.67302	.66180	.65087	.64020	.62979	13	
14	.72082	.70832	.69616	.68434	.67283	.66162	.65069	.64002	.62962	14	
15	.72061	.70811	.69596	.68415	.67264	.66143	.65051	.63985	.62945	15	
16	.72040	.70791	.69576	.68395	.67245	.66125	.65033	.63967	.62927	16	
17	.72019	.70770	.69557	.68376	.67226	.66106	.65015	.63950	.62910	17	
18	.71998	.70750	.69537	.68356	.67207	.66088	.64997	.63932	.62893	18	
19	.71977	.70729	.69517	.68337	.67188	.66070	.64979	.63915	.62876	19	
20	.71956	.70709	.69497	.68318	.67170	.66051	.64961	.63897	.62859	20	
21	.71935	.70688	.69477	.68298	.67151	.66033	.64943	.63880	.62842	21	
22	.71914	.70668	.69457	.68279	.67132	.66014	.64925	.63862	.62825	22	
23	.71892	.70647	.69437	.68259	.67113	.65996	.64907	.63845	.62808	23	
24	.71871	.70627	.69417	.68240	.67094	.65978	.64889	.63827	.62791	24	
25	.71850	.70606	.69397	.68221	.67075	.65959	.64871	.63810	.62774	25	
26	.71829	.70586	.69377	.68201	.67056	.65941	.64853	.63792	.62757	26	
27	.71808	.70566	.69357	.68182	.67038	.65928	.64835	.63775	.62739	27	
28	.71787	.70545	.69338	.68163	.67019	.65904	.64818	.63757	.62722	28	
29	.71766	.70525	.69318	.68143	.67000	.65886	.64800	.63740	.62705	29	
30	.71745	.70504	.69298	.68124	.66981	.65868	.64782	.63722	.62688	30	
31	.71724	.70484	.69278	.68105	.66962	.65849	.64764	.63705	.62671	31	
32	.71703	.70464	.69258	.68086	.66944	.65831	.64746	.63688	.62654	32	
33	.71682	.70443	.69239	.68066	.66925	.65813	.64728	.63670	.62637	33	
34	.71661	.70423	.69219	.68047	.66906	.65794	.64710	.63653	.62620	34	
35	.71641	.70403	.69199	.68028	.66887	.65776	.64692	.63635	.62603	35	
36	.71620	.70382	.69179	.68009	.66869	.65758	.64675	.63618	.62586	36	
37	.71599	.70362	.69159	.67989	.66850	.65739	.64657	.63601	.62569	37	
38	.71578	.70342	.69140	.67970	.66831	.65721	.64639	.63583	.62552	38	
39	.71557	.70321	.69120	.67951	.66812	.65703	.64621	.63566	.62535	39	
40	.71536	.70301	.69100	.67932	.66794	.65685	.64603	.63548	.62518	40	
41	.71515	.70281	.69080	.67912	.66775	.65666	.64586	.63531	.62501	41	
42	.71494	.70260	.69061	.67893	.66756	.65648	.64568	.63514	.62485	42	
43	.71473	.70240	.69041	.67874	.66737	.65630	.64550	.63496	.62468	43	
44	.71453	.70220	.69021	.67855	.66719	.65612	.64532	.63479	.62451	44	
45	.71432	.70200	.69002	.67836	.66700	.65594	.64514	.63462	.62434	45	
46	.71411	.70179	.68982	.67816	.66681	.65575	.64497	.63444	.62417	46	
47	.71390	.70159	.68962	.67797	.66663	.65557	.64479	.63427	.62400	47	
48	.71369	.70139	.68942	.67778	.66644	.65539	.64461	.63410	.62383	48	
49	.71349	.70119	.68923	.67759	.66625	.65521	.64443	.63392	.62366	49	
50	.71328	.70099	.68903	.67740	■	.65503	.64426	.63375	.62349	50	
51	.71307	.70078	.68884	.67721	.66588	.65484	.64408	.63358	.62332	51	
52	.71286	.70058	.68864	.67702	.66570	.65466	.64390	.63340	.62315	52	
53	.71265	.70038	.68844	.67682	.66551	.65448	.64373	.63323	.62298	53	
54	.71245	.70018	.68825	.67663	.66532	.65430	.64355	.63308	■	54	
55	.71224	.69998	.68805	.67644	.66514	.65412	.64337	.63299	.62265	55	
56	.71203	.69977	.68785	.67625	.66495	.65394	.64320	.63271	.62248	56	
57	.71183	.69957	.68766	.67606	.66477	.65376	.64302	.63254	.62231	57	
58	.71162	.69937	.68746	.67587	.66458	.65357	.64284	.63237	.62214	■	
59	.71141	.69917	.68727	.67568	.66439	.65339	.64267	.63220	.62197	59	

0 ^a or 0°		PROP. LOGARITHMS. (r)									0 ^a or 0°	
"	43'	44'	45'	46'	47'	48'	49'	50'	51'	"		
0	.62180	.61182	.60206	.59251	.58317	.57403	.56508	.55630	.54770	0		
1	.62164	.61166	.60190	.59236	.58302	.57388	.56493	.55616	.54756	1		
2	.62147	.61149	.60174	.59220	.58287	.57373	.56478	.55601	.54742	2		
3	.62130	.61133	.60158	.59204	.58271	.57358	.56463	.55587	.54728	3		
4	.62113	.61116	.60142	.59189	.58256	.57343	.56449	.55572	.54714	4		
5	.62096	.61100	.60126	.59173	.58241	.57328	.56434	.55558	.54699	5		
6	.62080	.61083	.60110	.59157	.58225	.57313	.56419	.55543	.54685	6		
7	.62063	.61067	.60094	.59141	.58210	.57298	.56404	.55529	.54671	7		
8	.62046	.61051	.60078	.59126	.58194	.57283	.56390	.55515	.54657	8		
9	.62029	.61034	.60061	.59110	.58179	.57268	.56375	.55500	.54643	9		
10	.62012	.61018	.60045	.59094	.58164	.57253	.56360	.55486	.54629	10		
11	.61996	.61001	.60029	.59079	.58148	.57238	.56345	.55471	.54614	11		
12	.61979	.60985	.60013	.59063	.58133	.57223	.56331	.55457	.54600	12		
13	.61962	.60969	.59997	.59047	.58118	.57208	.56316	.55442	.54586	13		
14	.61945	.60952	.59981	.59032	.58102	.57193	.56301	.55428	.54572	14		
15	.61929	.60936	.59965	.59016	.58087	.57178	.56287	.55414	.54558	15		
16	.61912	.60920	.59949	.59000	.58072	.57163	.56272	.55399	.54544	16		
17	.61895	.60903	.59933	.58985	.58056	.57148	.56257	.55385	.54530	17		
18	.61878	.60887	.59917	.58969	.58041	.57133	.56243	.55370	.54516	18		
19	.61862	.60871	.59901	.58953	.58026	.57118	.56228	.55356	.54501	19		
20	.61845	.60854	.59885	.58938	.58011	.57103	.56213	.55342	.54487	20		
21	.61828	.60838	.59870	.58922	.57995	.57088	.56199	.55327	.54473	21		
22	.61812	.60822	.59854	.58907	.57980	.57073	.56184	.55313	.54459	22		
23	.61795	.60805	.59838	.58891	.57965	.57058	.56169	.55299	.54445	23		
24	.61778	.60789	.59822	.58875	.57949	.57043	.56155	.55284	.54431	24		
25	.61762	.60773	.59806	.58860	.57934	.57028	.56140	.55270	.54417	25		
26	.61745	.60756	.59790	.58844	.57919	.57013	.56125	.55255	.54403	26		
27	.61728	.60740	.59774	.58829	.57904	.56998	.56111	.55241	.54389	27		
28	.61712	.60724	.59758	.58813	.57888	.56983	.56096	.55227	.54375	28		
29	.61695	.60708	.59742	.58798	.57873	.56968	.56081	.55212	.54361	29		
30	.61678	.60691	.59726	.58782	.57858	.56953	.56067	.55198	.54347	30		
31	.61662	.60675	.59710	.58766	.57843	.56938	.56052	.55184	.54332	31		
32	.61645	.60659	.59694	.58751	.57827	.56923	.56037	.55169	.54318	32		
33	.61628	.60642	.59678	.58735	.57812	.56908	.56023	.55155	.54304	33		
34	.61612	.60626	.59663	.58720	.57797	.56893	.56008	.55141	.54290	34		
35	.61595	.60610	.59647	.58704	.57782	.56879	.55994	.55127	.54276	35		
36	.61579	.60594	.59631	.58689	.57767	.56864	.55979	.55112	.54262	36		
37	.61562	.60578	.59615	.58673	.57751	.56849	.55964	.55098	.54248	37		
38	.61545	.60561	.59599	.58658	.57736	.56834	.55950	.55084	.54234	38		
39	.61529	.60545	.59583	.58642	.57721	.56819	.55935	.55069	.54220	39		
40	.61512	.60529	.59567	.58627	.57706	.56804	.55921	.55055	.54206	40		
41	.61496	.60513	.59551	.58611	.57691	.56789	.55906	.55041	.54192	41		
42	.61479	.60496	.59536	.58596	.57675	.56774	.55892	.55026	.54178	42		
43	.61463	.60480	.59520	.58580	.57660	.56759	.55877	.55012	.54164	43		
44	.61446	.60464	.59504	.58565	.57645	.56745	.55862	.54998	.54150	44		
45	.61429	.60448	.59488	.58549	.57630	.56730	.55848	.54984	.54136	45		
46	.61413	.60432	.59472	.58534	.57615	.56715	.55833	.54969	.54122	46		
47	.61396	.60416	.59457	.58518	.57600	.56700	.55819	.54955	.54108	47		
48	.61380	.60399	.59441	.58503	.57584	.56685	.55804	.54941	.54094	48		
49	.61363	.60383	.59425	.58487	.57569	.56670	.55790	.54927	.54080	49		
50	.61347	.60367	.59409	.58472	.57554	.56656	.55775	.54912	.54066	50		
51	.61330	.60351	.59393	.58456	.57539	.56641	.55761	.54898	.54052	51		
52	.61314	.60335	.59378	.58441	.57524	.56626	.55746	.54884	.54038	52		
53	.61297	.60319	.59362	.58425	.57509	.56611	.55732	.54870	.54024	53		
54	.61281	.60303	.59346	.58410	.57494	.56596	.55717	.54855	.54011	54		
55	.61264	.60286	.59330	.58395	.57479	.56582	.55703	.54841	.53997	55		
56	.61248	.60270	.59314	.58379	.57463	.56567	.55688	.54827	.53983	56		
57	.61231	.60254	.59299	.58364	.57448	.56552	.55674	.54813	.53969	57		
58	.61215	.60238	.59283	.58348	.57433	.56537	.55659	.54799	.53955	58		
59	.61198	.60222	.59267	.58333	.57418	.56522	.55645	.54784	.53941	59		

0° or 0°		PROP. LOGARITHMS. (r.)							0° or 0°	
'	52'	53'	54'	55'	56'	57'	58'	59'	"	
0	.53927	.53100	.52288	.51491	.50708	.49940	.49184	.48442	0	
1	.53913	.53086	.52274	.51478	.50696	.49927	.49172	.48430	1	
2	.53899	.53072	.52261	.51465	.50683	.49914	.49159	.48418	2	
3	.53885	.53059	.52248	.51452	.50670	.49902	.49147	.48405	3	
4	.53871	.53045	.52234	.51438	.50657	.49889	.49135	.48393	4	
5	.53857	.53031	.52221	.51425	.50644	.49876	.49122	.48381	5	
6	.53843	.53018	.52208	.51412	.50631	.49864	.49110	.48369	6	
7	.53830	.53004	.52194	.51399	.50618	.49851	.49097	.48356	7	
8	.53816	.52991	.52181	.51386	.50605	.49838	.49085	.48344	8	
9	.53802	.52977	.52167	.51373	.50592	.49826	.49072	.48332	9	
10	.53788	.52963	.52154	.51360	.50579	.49813	.49060	.48320	10	
11	.53774	.52950	.52141	.51346	.50566	.49800	.49047	.48307	11	
12	.53760	.52936	.52127	.51333	.50554	.49788	.49035	.48295	12	
13	.53746	.52922	.52114	.51320	.50541	.49775	.49023	.48283	13	
14	.53732	.52909	.52101	.51307	.50528	.49762	.49010	.48271	14	
15	.53719	.52895	.52087	.51294	.50515	.49750	.48998	.48258	15	
16	.53705	.52882	.52074	.51281	.50502	.49737	.48985	.48246	16	
17	.53691	.52868	.52061	.51268	.50489	.49724	.48973	.48234	17	
18	.53677	.52855	.52047	.51255	.50476	.49712	.48960	.48222	18	
19	.53663	.52841	.52034	.51242	.50464	.49699	.48948	.48210	19	
20	.53649	.52827	.52021	.51229	.50451	.49687	.48936	.48197	20	
21	.53636	.52814	.52007	.51215	.50438	.49674	.48923	.48185	21	
22	.53622	.52800	.51994	.51202	.50425	.49661	.48911	.48173	22	
23	.53608	.52787	.51981	.51189	.50412	.49649	.48898	.48161	23	
24	.53594	.52773	.51967	.51176	.50399	.49636	.48886	.48149	24	
25	.53580	.52760	.51954	.51163	.50387	.49623	.48874	.48136	25	
26	.53567	.52746	.51941	.51150	.50374	.49611	.48861	.48124	26	
27	.53553	.52732	.51927	.51137	.50361	.49598	.48849	.48112	27	
28	.53539	.52719	.51914	.51124	.50348	.49586	.48836	.48100	28	
29	.53525	.52705	.51901	.51111	.50335	.49573	.48824	.48088	29	
30	.53511	.52692	.51888	.51098	.50322	.49560	.48812	.48076	30	
31	.53498	.52678	.51874	.51085	.50310	.49548	.48799	.48063	31	
32	.53484	.52665	.51861	.51072	.50297	.49535	.48787	.48051	32	
33	.53470	.52651	.51848	.51059	.50284	.49523	.48775	.48039	33	
34	.53456	.52638	.51835	.51046	.50271	.49510	.48762	.48027	34	
35	.53442	.52624	.51821	.51033	.50258	.49498	.48750	.48015	35	
36	.53429	.52611	.51808	.51020	.50246	.49485	.48737	.48003	36	
37	.53415	.52597	.51795	.51007	.50233	.49472	.48725	.47990	37	
38	.53401	.52584	.51781	.50994	.50220	.49460	.48713	.47978	38	
39	.53387	.52570	.51768	.50981	.50207	.49447	.48700	.47966	39	
40	.53374	.52557	.51755	.50968	.50194	.49435	.48688	.47954	40	
41	.53360	.52543	.51742	.50955	.50182	.49422	.48676	.47942	41	
42	.53346	.52530	.51729	.50942	.50169	.49410	.48663	.47930	42	
43	.53332	.52516	.51715	.50929	.50156	.49397	.48651	.47918	43	
44	.53319	.52503	.51702	.50916	.50143	.49385	.48639	.47906	44	
45	.53305	.52489	.51689	.50903	.50131	.49372	.48626	.47893	45	
46	.53291	.52476	.51676	.50890	.50118	.49360	.48614	.47881	46	
47	.53278	.52462	.51662	.50877	.50105	.49347	.48602	.47869	47	
48	.53264	.52449	.51649	.50864	.50092	.49334	.48590	.47857	48	
49	.53250	.52436	.51636	.50851	.50080	.49322	.48577	.47845	49	
50	.53236	.52422	.51623	.50838	.50067	.49309	.48565	.47833	50	
51	.53223	.52409	.51610	.50825	.50054	.49297	.48553	.47821	51	
52	.53209	.52395	.51596	.50812	.50041	.49284	.48540	.47809	52	
53	.53195	.52382	.51583	.50799	.50029	.49272	.48528	.47797	53	
54	.53182	.52368	.51570	.50786	.50016	.49259	.48516	.47785	54	
55	.53168	.52355	.51557	.50773	.50003	.49247	.48503	.47772	55	
56	.53154	.52342	.51544	.50760	.49991	.49234	.48491	.47760	56	
57	.53141	.52328	.51530	.50747	.49978	.49222	.48479	.47748	57	
58	.53127	.52315	.51517	.50734	.49965	.49209	.48467	.47736	58	
59	.53113	.52301	.51504	.50721	.49952	.49197	.48454	.47724	59	

1 ^h or 1 ^o		PROP. LOGARITHMS. (r.)									1 ^h or 1 ^o
"	0'	1	2'	3'	4'	5'	6'	7'	8'	9'	
0	.47712	.46994	.46288	.45593	.44909	.44236	.43573	.42920	.42276	.41642	
1	.47700	.46982	.46276	.45582	.44898	.44225	.43562	.42909	.42266	.41632	
2	.47688	.46971	.46265	.45570	.44887	.44214	.43551	.42898	.42255	.41621	
3	.47676	.46959	.46253	.45559	.44875	.44203	.43540	.42887	.42244	.41611	
4	.47664	.46947	.46241	.45547	.44864	.44191	.43529	.42877	.42234	.41600	
5	.47652	.46935	.46230	.45536	.44853	.44180	.43518	.42866	.42223	.41590	
6	.47640	.46923	.46218	.45524	.44841	.44169	.43507	.42855	.42213	.41579	
7	.47628	.46911	.46206	.45513	.44830	.44158	.43496	.42844	.42202	.41569	
8	.47616	.46899	.46195	.45501	.44819	.44147	.43485	.42833	.42191	.41559	
9	.47604	.46888	.46183	.45490	.44808	.44136	.43474	.42823	.42181	.41548	
10	.47592	.46876	.46171	.45478	.44796	.44125	.43463	.42812	.42170	.41538	
11	.47580	.46864	.46160	.45467	.44785	.44114	.43452	.42801	.42159	.41527	
12	.47568	.46852	.46148	.45456	.44774	.44102	.43441	.42790	.42149	.41517	
13	.47556	.46840	.46137	.45444	.44762	.44091	.43431	.42780	.42138	.41506	
14	.47544	.46828	.46125	.45433	.44751	.44080	.43420	.42769	.42128	.41496	
15	.47532	.46817	.46113	.45421	.44740	.44069	.43409	.42758	.42117	.41485	
16	.47520	.46805	.46102	.45410	.44729	.44058	.43398	.42747	.42106	.41475	
17	.47508	.46793	.46090	.45398	.44717	.44047	.43387	.42737	.42096	.41464	
18	.47496	.46781	.46078	.45387	.44706	.44036	.43376	.42726	.42085	.41454	
19	.47484	.46769	.46067	.45375	.44695	.44025	.43365	.42715	.42075	.41443	
20	.47472	.46758	.46055	.45364	.44684	.44014	.43354	.42704	.42064	.41433	
21	.47460	.46746	.46044	.45353	.44672	.44003	.43343	.42693	.42053	.41423	
22	.47448	.46734	.46032	.45341	.44661	.43992	.43332	.42683	.42043	.41412	
23	.47436	.46722	.46020	.45330	.44650	.43981	.43321	.42672	.42032	.41402	
24	.47424	.46710	.46009	.45318	.44639	.43969	.43310	.42661	.42022	.41391	
25	.47412	.46699	.45997	.45307	.44627	.43958	.43300	.42651	.42011	.41381	
26	.47400	.46687	.45986	.45295	.44616	.43947	.43289	.42640	.42000	.41370	
27	.47388	.46675	.45974	.45284	.44605	.43936	.43278	.42629	.41990	.41360	
28	.47376	.46663	.45962	.45273	.44594	.43925	.43267	.42618	.41979	.41350	
29	.47364	.46652	.45951	.45261	.44583	.43914	.43256	.42608	.41969	.41339	
30	.47352	.46640	.45939	.45250	.44571	.43903	.43245	.42597	.41958	.41329	
31	.47340	.46628	.45928	.45238	.44560	.43892	.43234	.42586	.41948	.41318	
32	.47328	.46616	.45916	.45227	.44549	.43881	.43223	.42575	.41937	.41308	
33	.47316	.46604	.45905	.45216	.44538	.43870	.43212	.42565	.41927	.41298	
34	.47304	.46593	.45893	.45204	.44526	.43859	.43202	.42554	.41916	.41287	
35	.47292	.46581	.45881	.45193	.44515	.43848	.43191	.42543	.41905	.41277	
36	.47280	.46569	.45870	.45182	.44504	.43837	.43180	.42533	.41895	.41266	
37	.47268	.46557	.45858	.45170	.44493	.43826	.43169	.42522	.41884	.41256	
38	.47256	.46546	.45847	.45159	.44482	.43815	.43158	.42511	.41874	.41246	
39	.47244	.46534	.45835	.45147	.44470	.43804	.43147	.42500	.41863	.41235	
40	.47232	.46522	.45824	.45136	.44459	.43793	.43136	.42490	.41853	.41225	
41	.47220	.46510	.45812	.45125	.44448	.43782	.43126	.42479	.41842	.41214	
42	.47208	.46499	.45800	.45113	.44437	.43771	.43115	.42468	.41832	.41204	
43	.47196	.46487	.45789	.45102	.44426	.43760	.43104	.42458	.41821	.41194	
44	.47185	.46475	.45777	.45091	.44414	.43749	.43093	.42447	.41811	.41183	
45	.47173	.46464	.45766	.45079	.44403	.43738	.43082	.42436	.41800	.41173	
46	.47161	.46452	.45754	.45068	.44392	.43727	.43071	.42426	.41789	.41162	
47	.47149	.46440	.45743	.45057	.44381	.43716	.43060	.42415	.41779	.41152	
48	.47137	.46428	.45731	.45045	.44370	.43705	.43050	.42404	.41768	.41142	
49	.47125	.46417	.45720	.45034	.44359	.43694	.43039	.42394	.41758	.41131	
50	.47113	.46405	.45708	.45022	.44347	.43683	.43028	.42383	.41747	.41121	
51	.47101	.46393	.45697	.45011	.44336	.43672	.43017	.42372	.41737	.41111	
52	.47089	.46382	.45685	.45000	.44325	.43661	.43006	.42362	.41726	.41100	
53	.47077	.46370	.45674	.44988	.44314	.43650	.42995	.42351	.41716	.41090	
54	.47066	.46358	.45662	.44977	.44303	.43639	.42985	.42340	.41705	.41080	
55	.47054	.46346	.45651	.44966	.44292	.43628	.42974	.42330	.41695	.41069	
56	.47042	.46335	.45639	.44955	.44280	.43617	.42963	.42319	.41684	.41059	
57	.47030	.46323	.45628	.44943	.44269	.43606	.42952	.42308	.41674	.41048	
58	.47018	.46311	.45616	.44932	.44258	.43595	.42941	.42298	.41663	.41038	
59	.47006	.46300	.45605	.44921	.44247	.43584	.42931	.42287	.41653	.41028	

1 st or 1 ^o		PROP. LOGARITHMS. (r.)								1 st or 1 ^o	
N	10'	11'	12'	13'	14'	15'	16'	17'	III'	19'	
0	.41017	.40401	.39794	.39195	.38604	.38021	.37446	.36878	.36318	.35765	
1	.41007	.40391	.39784	.39185	.38594	.38011	.37436	.36869	.36309	.35755	
2	.40997	.40381	.39774	.39175	.38585	.38002	.37427	.36859	.36299	.35746	
3	.40986	.40371	.39764	.39165	.38575	.37992	.37417	.36850	.36290	.35737	
4	.40976	.40361	.39754	.39155	.38565	.37983	.37408	.36841	.36281	.35728	
5	.40966	.40350	.39744	.39145	.38555	.37973	.37398	.36831	.36271	.35719	
6	.40955	.40340	.39734	.39136	.38545	.37963	.37389	.36822	.36262	.35710	
7	.40945	.40330	.39724	.39126	.38536	.37954	.37379	.36812	.36253	.35700	
8	.40935	.40320	.39714	.39116	.38526	.37944	.37370	.36803	.36244	.35691	
9	.40924	.40310	.39704	.39106	.38516	.37934	.37360	.36794	.36234	.35682	
10	.40914	.40300	.39694	.39096	.38506	.37925	.37351	.36784	.36225	.35673	
11	.40904	.40289	.39684	.39086	.38497	.37915	.37341	.36775	.36216	.35664	
12	.40894	.40279	.39674	.39076	.38487	.37905	.37332	.36766	.36207	.35655	
13	.40883	.40269	.39664	.39066	.38477	.37896	.37322	.36756	.36197	.35646	
14	.40873	.40259	.39653	.39056	.38467	.37886	.37313	.36747	.36188	.35636	
15	.40863	.40249	.39643	.39046	.38458	.37877	.37303	.36737	.36179	.35627	
16	.40852	.40239	.39633	.39037	.38448	.37867	.37294	.36728	.36170	.35618	
17	.40842	.40228	.39623	.39027	.38438	.37857	.37284	.36719	.36160	.35609	
18	.40832	.40218	.39613	.39017	.38428	.37848	.37275	.36709	.36151	.35600	
19	.40821	.40208	.39603	.39007	.38419	.37838	.37265	.36700	.36142	.35591	
20	.40811	.40198	.39593		.38409	.37829	.37256	.36691	.36133	.35582	
21	.40801	.40188	.39583	.38987	.38399	.37819	.37246	.36681	.36123	.35573	
22	.40791	.40178	.39573	.38977	.38389	.37809	.37237	.36672	.36114	.35563	
23	.40780	.40168	.39563	.38968	.38380	.37800	.37227	.36663	.36105	.35554	
24	.40770	.40157	.39553	.38958	.38370	.37790	.37218	.36653	.36096	.35545	
25	.40760	.40147	.39543	.38948	.38360	.37781	.37208	.36644	.36086	.35536	
26	.40749	.40137	.39533	.38938	.38351	.37771	.37199	.36634	.36077	.35527	
27	.40739	.40127	.39523	.38928	.38341	.37761	.37189	.36625	.36068	.35518	
28	.40729	.40117	.39513	.38918	.38331	.37752	.37180	.36616	.36059	.35509	
29	.40719	.40107	.39503	.38908	.38321	.37742	.37171	.36606	.36050	.35500	
30	.40708	.40097	.39493	.38899	.38312	.37733	.37161	.36597	.36040	.35491	
31	.40698	.40087	.39483	.38889	.38302	.37723	.37152	.36588	.36031	.35481	
32	.40688	.40076	.39473	.38879	.38292	.37713	.37142	.36578	.36022	.35472	
33	.40678	.40066	.39464	.38869	.38282	.37704	.37133	.36569	.36013	.35463	
34	.40667	.40056	.39454	.38859	.38273	.37694	.37123	.36560	.36003	.35454	
35	.40657	.40046	.39444	.38849	.38263	.37685	.37114	.36550	.35994	.35445	
36	.40647	.40036	.39434	.38839	.38253	.37675	.37104	.36541	.35985	.35436	
37	.40637	.40026	.39424	.38830	.38244	.37665	.37095	.36532	.35976	.35427	
38	.40626	.40016	.39414	.38820	.38234	.37656	.37085	.36522	.35967	.35418	
39	.40616	.40006	.39404	.38810	.38224	.37646	.37076	.36513	.35957	.35409	
40	.40606	.39996	.39394	.38800	.38215	.37637	.37067	.36504	.35948	.35400	
41	.40596	.39985	.39384	.38790	.38205	.37627	.37057	.36494	.35939	.35391	
42	.40585	.39975	.39374	.38781	.38195	.37618	.37048	.36485	.35930	.35381	
43	.40575	.39965	.39364	.38771	.38186	.37608	.37038	.36476	.35921	.35372	
44	.40565	.39955	.39354	.38761	.38176	.37599	.37029	.36467	.35911	.35363	
45	.40555	.39945	.39344	.38751	.38166	.37589	.37019	.36457	.35902	.35354	
46	.40544	.39935	.39334	.38741	.38156	.37579	.37010	.36448	.35893	.35345	
47	.40534	.39925	.39324	.38731	.38147	.37570	.37001	.36439	.35884	.35336	
48	.40524	.39915	.39314	.38722	.38137	.37560	.36991	.36429	.35875	.35327	
49	.40514	.39905	.39304	.38712	.38127	.37551	.36982	.36420	.35865	.35318	
50	.40503	.39895	.39294	.38702	.38118	.37541	.36972	.36411	.35856	.35309	
51	.40493	.39885	.39284	.38692	.38108	.37532	.36963	.36401	.35847	.35300	
52	.40483	.39874	.39274	.38682	.38098	.37522	.36953	.36392	.35838	.35291	
53	.40473	.39864	.39264	.38673	.38089	.37513	.36944	.36383	.35829	.35282	
54	.40463	.39854	.39254	.38663	.38079	.37503	.36935	.36374	.35820	.35273	
55	.40452	.39844	.39245	.38653	.38069	.37494	.36925	.36364	.35810	.35264	
56	.40442	.39834	.39235	.38643	.38060	.37484	.36916	.36355	.35801	.35254	
57	.40432	.39824	.39225	.38633	.38050	.37474	.36906	.36346	.35792	.35245	
58	.40422	.39814	.39215	.38624	.38040	.37465	.36897	.36336	.35783	.35236	
59	.40412	.39804	.39205	.38614	.38031	.37455	.36886	.36327	.35774	.35227	

1° or 1'.

PROP. LOGARITHMS. (r.)

1° or 1'.

"	20'	21'	22'	23'	24'	25'	26'	27'	28'	■
0	.35218	.34679	.34146	.33619	.33099	.32585	.32077	.31575	.31079	.30588
1	.35209	.34670	.34137	.33611	.33091	.32577	.32069	.31567	.31071	.30580
2	.35200	.34661	.34128	.33602	.33082	.32568	.32061	.31559	.31063	.30572
3	.35191	.34652	.34119	.33593	.33073	.32560	.32052	.31550	.31054	.30564
4	.35182	.34643	.34111	.33585	.33065	.32551	.32044	.31542	.31046	.30556
5	.35173	.34634	.34102	.33576	.33056	.32543	.32035	.31534	.31038	.30548
6	.35164	.34625	.34093	.33567	.33048	.32534	.32027	.31525	.31030	.30539
7	.35155	.34616	.34084	.33558	.33039	.32526	.32019	.31517	.31021	.30531
8	.35146	.34607	.34075	.33550	.33030	.32517	.32010	.31509	.31013	.30523
9	.35137	.34598	.34066	.33541	.33022	.32509	.32002	.31501	.31005	.30515
10	.35128	.34589	.34058	.33532	.33013	.32500	.31993	.31492	.30997	.30507
11	.35119	.34581	.34049	.33524	.33005	.32492	.31985	.31484	.30989	.30499
12	.35110	.34572	.34040	.33515	.32996	.32483	.31977	.31476	.30980	.30491
13	.35101	.34563	.34031	.33506	.32987	.32475	.31968	.31467	.30972	.30483
14	.35092	.34554	.34022	.33498	.32979	.32466	.31960	.31459	.30964	.30475
15	.35083	.34545	.34014	.33489	.32970	.32458	.31951	.31451	.30956	.30466
16	.35074	.34536	.34005	.33480	.32962	.32449	.31943	.31442	.30948	.30458
17	.35065	.34527	.33996	.33471	.32953	.32441	.31935	.31434	.30939	.30450
18	.35056	.34518	.33987	.33463	.32944	.32432	.31926	.31426	.30931	.30442
19	.35047	.34509	.33978	.33454	.32936	.32424	.31918	.31418	.30923	.30434
20	.35038	.34500	.33970	.33445	.32927	.32415	.31909	.31409	.30915	.30426
21	.35029	.34491	.33961	.33437	.32919	.32407	.31901	.31401	.30907	.30418
22	.35020	.34482	.33952	.33428	.32910	.32398	.31893	.31393	.30898	.30410
23	.35011	.34474	.33943	.33419	.32902	.32390	.31884	.31384	.30890	.30402
24	.35002	.34465	.33935	.33411	.32893	.32381	.31876	.31376	.30882	.30393
25	.34993	.34456	.33926	.33402	.32884	.32373	.31867	.31368	.30874	.30385
26	.34984	.34447	.33917	.33393	.32876	.32365	.31859	.31360	.30866	.30377
27	.34975	.34438	.33908	.33385	.32867	.32356	.31851	.31351	.30857	.30369
28	.34966	.34429	.33899	.33376	.32859	.32348	.31842	.31343	.30849	.30361
29	.34957	.34420	.33891	.33367	.32850	.32339	.31834	.31335	.30841	.30353
30	.34948	.34411	.33882	.33359	.32842	.32331	.31826	.31326	.30833	.30345
31	.34939	.34403	.33873	.33350	.32833	.32322	.31817	.31318	.30825	.30337
32	.34930	.34394	.33864	.33341	.32824	.32314	.31809	.31310	.30817	.30329
33	.34921	.34385	.33856	.33333	.32816	.32305	.31801	.31302	.30808	.30321
34	.34912	.34376	.33847	.33324	.32807	.32297	.31792	.31293	.30800	.30313
35	.34903	.34367	.33838	.33315	.32799	.32288	.31784	.31285	.30792	.30305
36	.34894	.34358	.33829	.33307	.32790	.32280	.31776	.31277	.30784	.30296
37	.34885	.34349	.33820	.33298	.32782	.32271	.31767	.31269	.30776	.30288
38	.34876	.34340	.33812	.33289	.32773	.32263	.31759	.31260	.30768	.30280
39	.34867	.34332	.33803	.33281	.32765	.32255	.31750	.31252	.30759	.30272
40	.34858	.34323	.33794	.33272	.32756	.32246	.31742	.31244	.30751	.30264
41	.34849	.34314	.33785	.33263	.32747	.32238	.31734	.31236	.30743	.30256
42	.34840	.34305	.33777	.33255	.32739	.32229	.31725	.31227	.30735	.30248
43	.34831	.34296	.33768	.33246	.32730	.32221	.31717	.31219	.30727	.30240
44	.34822	.34287	.33759	.33237	.32722	.32212	.31709	.31211	.30718	.30232
45	.34813	.34278	.33750	.33229	.32713	.32204	.31700	.31203	.30710	.30224
46	.34804	.34270	.33742	.33220	.32705	.32195	.31692	.31194	.30702	.30216
47	.34795	.34261	.33733	.33211	.32696	.32187	.31684	.31186	.30694	.30208
48	.34786	.34252	.33724	.33203	.32688	.32179	.31675	.31178	.30686	.30200
49	.34777	.34243	.33715	.33194	.32679	.32170	.31667	.31170	.30678	.30192
50	.34768	.34234	.33707	.33186	.32671	.32162	.31659	.31161	.30670	.30183
51	.34759	.34225	.33698	.33177	.32662	.32153	.31650	.31153	.30662	.30175
52	.34750	.34217	.33689	.33168	.32654	.32145	.31642	.31145	.30653	.30167
53	.34741	.34208	.33681	.33160	.32645	.32136	.31634	.31137	.30645	.30159
54	.34732	.34199	.33672	.33151	.32636	.32128	.31625	.31128	.30637	.30151
55	.34723	.34190	.33663	.33142	.32628	.32120	.31617	.31120	.30629	.30143
56	.34715	.34181	.33654	.33134	.32619	.32111	.31609	.31112	.30621	.30135
57	.34706	.34172	.33646	.33125	.32611	.32103	.31600	.31104	.30613	.30127
58	.34697	.34164	.33637	.33117	.32602	.32094	.31592	.31096	.30605	.30119
59	.34688	.34155	.33628	.33108	.32594	.32086	.31584	.31087	.30596	.30111

1° or 1'.		PROP. LOGARITHMS. (r.)									1° or 1'.
"	30'	31'	32'	33'	34'	35'	36'	37'	38'	39'	
0	.30103	.29623	.29148	.28679	.28214	.27755	.27300	.26850	.26405	.25964	
1	.30097	.29615	.29141	.28671	.28207	.27747	.27293	.26843	.26397	.25956	
2	.30087	.29607	.29133	.28663	.28199	.27740	.27285	.26835	.26390	.25949	
3	.30079	.29599	.29125	.28656	.28191	.27732	.27278	.26828	.26382	.25942	
4	.30071	.29591	.29117	.28648	.28184	.27724	.27270	.26820	.26375	.25934	
5	.30063	.29583	.29109	.28640	.28176	.27717	.27262	.26813	.26368	.25927	
6	.30055	.29575	.29101	.28632	.28168	.27709	.27255	.26805	.26360	.25920	
7	.30047	.29567	.29093	.28625	.28161	.27702	.27247	.26798	.26353	.25913	
8	.30039	.29560	.29086	.28617	.28153	.27694	.27240	.26790	.26346	.25905	
9	.30031	.29552	.29078	.28609	.28145	.27686	.27232	.26783	.26338	.25898	
10	.30023	.29544	.29070	.28601	.28138	.27679	.27225	.26775	.26331	.25891	
11	.30015	.29536	.29062	.28593	.28130	.27671	.27217	.26768	.26323	.25883	
12	.30007	.29528	.29054	.28586	.28122	.27664	.27210	.26761	.26316	.25876	
13	.29999	.29520	.29046	.28578	.28114	.27656	.27202	.26753	.26309	.25869	
14	.29991	.29512	.29038	.28570	.28107	.27648	.27193	.26746	.26301	.25861	
15	.29983	.29504	.29031	.28562	.28099	.27641	.27187	.26738	.26294	.25854	
16	.29975	.29496	.29023	.28555	.28091	.27633	.27180	.26731	.26287	.25847	
17	.29966	.29488	.29015	.28547	.28084	.27626	.27172	.26723	.26279	.25839	
18	.29958	.29480	.2900	.28539	.28076	.27618	.27165	.26716	.26272	.25832	
19	.29950	.29472	.28999	.28531	.28068	.27610	.27157	.26709	.26265	.25825	
20	.29942	.29464	.28991	.28524	.28061	.27603	.27150	.26701	.26257	.25818	
21	.29934	.29456	.28984	.28516	.28053	.27595	.27142	.26694	.26250	.25810	
22	.29926	.29448	.28976	.28508	.28045	.27588	.27135	.26686	.26242	.25803	
23	.29918	.29441	.28968	.28500	.28038	.27580	.27127	.26679	.26235	.25796	
24	.29910	.29433	.28960	.28493	.28030	.27572	.27120	.26671	.26228	.25789	
25	.29902	.29425	.28952	.28485	.28022	.27565	.27112	.26664	.26220	.25781	
26	.29894	.29417	.28944	.28477	.28015	.27557	.27105	.26656	.26213	.25774	
27	.29886	.29409	.28937	.28469	.28007	.27550	.27097	.26649	.26206	.25767	
28	.29878	.29401	.28929	.28462	.27999	.27542	.27090	.26642	.26198	.25759	
29	.29870	.29393	.28921	.28454	.27992	.27534	.27082	.26634	.26191	.25752	
30	.29862	.29385	.28913	.28446	.27984	.27527	.27075	.26627	.26184	.25745	
31	.29854	.29377	.28905	.28438	.27976	.27519	.27067	.26619	.26176	.25738	
32	.29846	.29369	.28897	.28431	.27969	.27512	.27060	.26612	.26169	.25730	
33	.29838	.29361	.28890	.28423	.27961	.27504	.27052	.26605	.26162	.25723	
34	.29830	.29354	.28882	.28415	.27953	.27497	.27045	.26597	.26154	.25716	
35	.29822	.29346	.28874	.28407	.27946	.27489	.27037	.26590	.26147	.25709	
36	.29814	.29338	.28866	.28400	.27938	.27481	.27030	.26582	.26140	.25701	
37	.29806	.29330	.28858	.28392	.27930	.27474	.27022	.26575	.26132	.25694	
38	.29798	.29322	.28851	.28384	.27923	.27466	.27015	.26567	.26125	.25687	
39	.29790	.29314	.28843	.28376	.27915	.27459	.27007	.26560	.26118	.25680	
40	.29782	.29306	.28835	.28369	.27908	.27451	.27000	.26553	.26110	.25672	
41	.29775	.29298	.28827	.28361	.27900	.27444	.26992	.26545	.26103	.25665	
42	.29767	.29290	.28819	.28353	.27892	.27436	.26985	.26538	.26096	.25658	
43	.29759	.29282	.28811	.28346	.27885	.27428	.26977	.26530	.26088	.25650	
44	.29751	.29275	.28804	.28338	.27877	.27421	.26970	.26523	.26081	.25643	
45	.29743	.29267	.28796	.28330	.27869	.27413	.26962	.26516	.26074	.25636	
46	.29735	.29259	.28788	.28322	.27862	.27406	.26955	.26508	.26066	.25629	
47	.29727	.29251	.28780	.28315	.27854	.27398	.26947	.26501	.26059	.25621	
48	.29719	.29243	.28772	.28307	.27846	.27391	.26940	.26493	.26052	.25614	
49	.29711	.29235	.28765	.28300	.27839	.27383	.26932	.26486	.26044	.25607	
50	.29703	.29227	.28757	.28292	.27831	.27376	.26925	.26479	.26037	.25600	
51	.29695	.29219	.28749	.28284	.27824	.27368	.26917	.26471	.26030	.25592	
52	.29687	.29211	.28741	.28276	.27816	.27360	.26910	.26464	.26022	.25585	
53	.29679	.29204	.28733	.28268	.27808	.27353	.26902	.26456	.26015	.25578	
54	.29671	.29196	.28726	.28261	.27801	.27345	.26895	.26449	.26008	.25571	
55	.29663	.29188	.28718	.28253	.27793	.27338	.26887	.26442	.26000	.25563	
56	.29655	.29180	.28710	.28245	.27785	.27330	.26880	.26434	.25993	.25556	
57	.29647	.29172	.28702	.28238	.27778	.27323	.26872	.26427	.25986	.25549	
58	.29639	.29164	.28695	.28230	.27770	.27315	.26865	.26420	.25978	.25542	
59	.29631	.29166	.28687	.28222	.27763	.27308	.26858	.26412	.25971	.25534	

1° or 10'		PROP. LOGARITHMS. (r.)										1° or 10'
"	40'	41'	42'	43'	44'	45'	46'	47'	48'	49'		
0	.25527	.25095	.24667	.24244	.23824	.23408	.22997	.22589	.22185	.21785		
1	.25520	.25088	.24660	.24237	.23817	.23401	.22990	.22582	.22178	.21778		
2	.25513	.25081	.24653	.24229	.23810	.23395	.22983	.22576	.22171	.21771		
3	.25506	.25074	.24646	.24222	.23803	.23388	.22976	.22569	.22165	.21765		
4	.25498	.25066	.24639	.24215	.23796	.23381	.22969	.22562	.22158	.21758		
5	.25491	.25059	.24632	.24208	.23789	.23374	.22963	.22555	.22151	.21751		
6	.25484	.25052	.24625	.24201	.23782	.23367	.22956	.22548	.22145	.21745		
7	.25477	.25045	.24618	.24194	.23775	.23360	.22949	.22542	.22138	.21738		
8	.25469	.25038	.24610	.24187	.23768	.23353	.22942	.22535	.22131	.21732		
9	.25462	.25031	.24603	.24180	.23761	.23346	.22935	.22528	.22125	.21725		
10	.25455	.25024	.24596	.24173	.23754	.23339	.22928	.22521	.22118	.21718		
11	.25448	.25016	.24589	.24166	.23747	.23332	.22922	.22515	.22111	.21712		
12	.25440	.25009	.24582	.24159	.23740	.23326	.22915	.22508	.22105	.21705		
13	.25433	.25002	.24575	.24152	.23734	.23319	.22908	.22501	.22098	.21698		
14	.25426	.24995	.24568	.24145	.23727	.23312	.22901	.22494	.22091	.21692		
15	.25419	.24988	.24561	.24138	.23720	.23305	.22894	.22488	.22084	.21685		
16	.25412	.24981	.24554	.24131	.23713	.23298	.22888	.22481	.22078	.21678		
17	.25404	.24974	.24547	.24124	.23706	.23291	.22881	.22474	.22071	.21672		
18	.25397	.24966	.24540	.24117	.23699	.23284	.22874	.22467	.22064	.21665		
19	.25390	.24959	.24533	.24110	.23692	.23278	.22867	.22461	.22058	.21659		
20	.25383	.24952	.24526	.24103	.23685	.23271	.22860	.22454	.22051	.21652		
21	.25376	.24945	.24518	.24096	.23678	.23264	.22854	.22447	.22044	.21645		
22	.25368	.24938	.24511	.24089	.23671	.23257	.22847	.22440	.22038	.21639		
23	.25361	.24931	.24504	.24082	.23664	.23250	.22840	.22434	.22031	.21632		
24	.25354	.24923	.24497	.24075	.23657	.23243	.22833	.22427	.22024	.21626		
25	.25347	.24916	.24490	.24068	.23650	.23236	.22826	.22420	.22018	.21619		
26	.25339	.24909	.24483	.24061	.23643	.23229	.22819	.22413	.22011	.21612		
27	.25332	.24902	.24476	.24054	.23636	.23223	.22813	.22407	.22004	.21606		
28	.25325	.24895	.24469	.24047	.23629	.23216	.22806	.22400	.21998	.21599		
29	.25318	.24888	.24462	.24040	.23623	.23209	.22799	.22393	.21991	.21592		
30	.25311	.24881	.24455	.24033	.23616	.23202	.22792	.22386	.21984	.21586		
31	.25303	.24874	.24448	.24026	.23609	.23195	.22785	.22380	.21978	.21579		
32	.25296	.24866	.24441	.24019	.23602	.23188	.22779	.22373	.21971	.21573		
33	.25289	.24859	.24434	.24012	.23595	.23181	.22772	.22366	.21964	.21566		
34	.25282	.24852	.24427	.24005	.23588	.23175	.22765	.22359	.21958	.21559		
35	.25275	.24845	.24420	.24008	.23581	.23168	.22758	.22353	.21951	.21553		
36	.25267	.24838	.24413	.23991	.23574	.23161	.22752	.22346	.21944	.21546		
37	.25260	.24831	.24405	.23984	.23567	.23154	.22745	.22339	.21938	.21540		
38	.25253	.24824	.24398	.23977	.23560	.23147	.22738	.22333	.21931	.21533		
39	.25246	.24817	.24391	.23970	.23553	.23140	.22731	.22326	.21924	.21526		
40	.25239	.24809	.24384	.23963	.23546	.23133	.22724	.22319	.21918	.21520		
41	.25231	.24802	.24377	.23956	.23539	.23127	.22718	.22312	.21911	.21513		
42	.25224	.24795	.24370	.23949	.23533	.23120	.22711	.22306	.21904	.21507		
43	.25217	.24788	.24363	.23942	.23526	.23113	.22704	.22299	.21898	.21500		
44	.25210	.24781	.24356	.23935	.23519	.23106	.22697	.22292	.21891	.21493		
45	.25203	.24774	.24349	.23928	.23512	.23099	.22690	.22286	.21884	.21487		
46	.25196	.24767	.24342	.23921	.23505	.23092	.22684	.22279	.21878	.21480		
47	.25188	.24760	.24335	.23914	.23498	.23086	.22677	.22272	.21871	.21474		
48	.25181	.24752	.24328	.23908	.23491	.23079	.22670	.22265	.21864	.21467		
49	.25174	.24745	.24321	.23901	.23484	.23072	.22663	.22259	.21858	.21460		
50	.25167	.24738	.24314	.23894	.23477	.23065	.22657	.22252	.21851	.21454		
51	.25160	.24731	.24307	.23887	.23470	.23058	.22650	.22245	.21844	.21447		
52	.25152	.24724	.24300	.23880	.23464	.23051	.22643	.22239	.21838	.21441		
53	.25145	.24717	.24293	.23873	.23457	.23044	.22636	.22232	.21831	.21434		
54	.25138	.24710	.24286	.23866	.23450	.23038	.22630	.22225	.21824	.21427		
55	.25131	.24703	.24279	.23859	.23443	.23031	.22623	.22218	.21818	.21421		
56	.25124	.24696	.24272	.23852	.23436	.23024	.22616	.22212	.21811	.21414		
57	.25117	.24689	.24265	.23845	.23429	.23017	.22609	.22205	.21805	.21408		
58	.25109	.24681	.24258	.23838	.23422	.23010	.22602	.22198	.21798	.21401		
59	.25102	.24674	.24251	.23831	.23415	.23003	.22596	.22192	.21791	.21395		

1 ^h or 1 ^o		PROP. LOGARITHMS. (r.)									1 ^h or 1 ^o
"	50'	51'	52'	53'	54'	55'	56'	57'	58'	59'	
0	.21388	.20995	.20605	.20219	.19837	.19457	.19081	.18710	.18339	.17973	
1	.21381	.20988	.20599	.20213	.19830	.19451	.19075	.18702	.18333	.17966	
2	.21375	.20982	.20593	.20207	.19824	.19445	.19069	.18696	.18327	.17960	
3	.21368	.20975	.20586	.20200	.19818	.19439	.19063	.18690	.18321	.17954	
4	.21362	.20969	.20580	.20194	.19811	.19432	.19056	.18684	.18315	.17948	
5	.21355	.20962	.20573	.20187	.19805	.19426	.19050	.18678	.18308	.17942	
6	.21349	.20956	.20567	.20181	.19799	.19420	.19044	.18672	.18302	.17936	
7	.21342	.20949	.20560	.20175	.19792	.19413	.19038	.18665	.18296	.17930	
8	.21335	.20943	.20554	.20168	.19786	.19407	.19032	.18659	.18290	.17924	
9	.21329	.20936	.20547	.20162	.19780	.19401	.19025	.18653	.18284	.17918	
10	.21322	.20930	.20541	.20155	.19773	.19395	.19019	.18647	.18278	.17912	
11	.21316	.20923	.20534	.20149	.19767	.19388	.19013	.18641	.18272	.17906	
12	.21309	.20917	.20528	.20143	.19761	.19382	.19007	.18634	.18266	.17900	
13	.21303	.20910	.20522	.20136	.19754	.19376	.19000	.18628	.18259	.17894	
14	.21296	.20904	.20515	.20130	.19748	.19369	.18994	.18622	.18253	.17887	
15	.21289	.20897	.20509	.20123	.19742	.19363	.18988	.18616	.18247	.17881	
16	.21283	.20891	.20502	.20117	.19735	.19357	.18982	.18610	.18241	.17875	
17	.21276	.20884	.20496	.20111	.19729	.19351	.18976	.18604	.18235	.17869	
18	.21270	.20878	.20489	.20104	.19723	.19344	.18969	.18597	.18229	.17863	
19	.21263	.20871	.20483	.20098	.19716	.19338	.18963	.18591	.18223	.17857	
20	.21257	.20865	.20476	.20091	.19710	.19332	.18957	.18585	.18217	.17851	
21	.21250	.20858	.20470	.20085	.19704	.19325	.18951	.18579	.18210	.17845	
22	.21243	.20852	.20464	.20079	.19697	.19319	.18944	.18573	.18204	.17839	
23	.21237	.20845	.20457	.20072	.19691	.19313	.18938	.18567	.18198	.17833	
24	.21230	.20839	.20451	.20066	.19685	.19307	.18932	.18560	.18192	.17827	
25	.21224	.20832	.20444	.20060	.19678	.19300	.18926	.18554	.18186	.17821	
26	.21217	.20826	.20436	.20053	.19672	.19294	.18920	.18548	.18180	.17815	
27	.21211	.20819	.20431	.20047	.19666	.19288	.18913	.18542	.18174	.17809	
28	.21204	.20813	.20425	.20040	.19659	.19282	.18907	.18536	.18168	.17803	
29	.21198	.20806	.20418	.20034	.19653	.19275	.18901	.18530	.18162	.17797	
30	.21191	.20800	.20412	.20028	.19647	.19269	.18895	.18528	.18156	.17790	
31	.21184	.20793	.20406	.20021	.19640	.19263	.18888	.18517	.18149	.17784	
32	.21178	.20787	.20399	.20015	.19634	.19257	.18882	.18511	.18143	.17778	
33	.21171	.20780	.20393	.20009	.19628	.19250	.18876	.18505	.18137	.17772	
34	.21165	.20774	.20386	.20002	.19621	.19244	.18870	.18499	.18131	.17766	
35	.21158	.20767	.20380	.19996	.19615	.19238	.18864	.18493	.18125	.17760	
36	.21152	.20761	.20373	.19989	.19609	.19231	.18857	.18487	.18119	.17754	
37	.21145	.20754	.20367	.19983	.19602	.19225	.18851	.18480	.18113	.17748	
38	.21139	.20748	.20361	.19977	.19596	.19219	.18845	.18474	.18107	.17742	
39	.21132	.20741	.20354	.19970	.19590	.19213	.18839	.18468	.18100	.17736	
40	.21126	.20735	.20348	.19964	.19584	.19206	.18833	.18462	.18094	.17730	
41	.21119	.20728	.20341	.19958	.19577	.19200	.18826	.18456	.18088	.17724	
42	.21112	.20722	.20335	.19951	.19571	.19194	.18820	.18450	.18082	.17718	
43	.21106	.20715	.20328	.19945	.19565	.19188	.18814	.18443	.18076	.17712	
44	.21099	.20709	.20322	.19938	.19558	.19181	.18808	.18437	.18070	.17706	
45	.21093	.20702	.20316	.19932	.19552	.19175	.18802	.18431	.18064	.17700	
46	.21086	.20696	.20309	.19926	.19546	.19169	.18795	.18425	.18058	.17694	
47	.21080	.20690	.20303	.19919	.19539	.19163	.18789	.18419	.18052	.17688	
48	.21073	.20683	.20296	.19913	.19533	.19156	.18783	.18413	.18046	.17682	
49	.21067	.20677	.20290	.19907	.19527	.19150	.18777	.18407	.18040	.17676	
50	.21060	.20670	.20284	.19900	.19520	.19144	.18771	.18400	.18033	.17669	
51	.21054	.20664	.20277	.19894	.19514	.19138	.18764	.18394	.18027	.17663	
52	.21047	.20657	.20271	.19888	.19508	.19131	.18758	.18388	.18021	.17657	
53	.21041	.20651	.20264	.19881	.19502	.19125	.18752	.18382	.18015	.17651	
54	.21034	.20644	.20258	.19875	.19495	.19119	.18746	.18376	.18009	.17645	
55	.21028	.20638	.20251	.19869	.19489	.19113	.18740	.18370	.18003	.17639	
56	.21021	.20631	.20245	.19862	.19483	.19106	.18733	.18364	.17997	.17633	
57	.21015	.20625	.20239	.19856	.19476	.19100	.18727	.18357	.17991	.17627	
58	.21008	.20618	.20232	.19849	.19470	.19094	.18721	.18351	.17985	.17621	
59	.21001	.20612	.20226	.19843	.19464	.19088	.18715	.18345	.17979	.17615	

2° OF 2°.		PROP. LOGARITHMS. (r.)									2° OF 2°.
"	0'	1'	2'	3'	4'	5'	6'	7'	8'	9'	
0	17609	17249	16891	16537	16185	15836	15490	15147	14806	14468	
1	17603	17243	16885	16531	16179	15830	15484	15141	14801	14469	
2	17597	17237	16879	16525	16173	15825	15479	15135	14795	14457	
3	17591	17231	16873	16519	16168	15819	15473	15130	14789	14451	
4	17585	17225	16868	16513	16162	15813	15467	15124	14784	14446	
5	17579	17219	16862	16507	16156	15807	15461	15118	14778	14440	
6	17573	17213	16856	16501	16150	15802	15456	15113	14772	14435	
7	17567	17207	16850	16496	16144	15796	15450	15107	14767	14429	
8	17561	17201	16844	16490	16138	15790	15444	15101	14761	14423	
9	17555	17195	16838	16484	16133	15784	15439	15096	14755	14418	
10	17549	17189	16832	16478	16127	15778	15433	15090	14750	14412	
11	17543	17183	16826	16472	16121	15773	15427	15084	14744	14407	
12	17537	17177	16820	16466	16115	15767	15421	15079	14738	14401	
13	17531	17171	16814	16460	16109	15761	15416	15073	14733	14395	
14	17525	17165	16808	16454	16103	15755	15410	15067	14727	14390	
15	17519	17159	16802	16449	16098	15749	15404	15061	14722	14384	
16	17513	17153	16796	16443	16092	15744	15398	15056	14716	14379	
17	17507	17147	16791	16437	16086	15738	15393	15050	14710	14373	
18	17501	17141	16785	16431	16080	15732	15387	15044	14705	14367	
19	17495	17135	16779	16425	16074	15726	15381	15039	14699	14362	
20	17489	17129	16773	16419	16068	15721	15375	15033	14693	14356	
21	17483	17123	16767	16413	16063	15715	15370	15027	14688	14351	
22	17477	17117	16761	16407	16057	15709	15364	15022	14682	14345	
23	17471	17111	16755	16402	16051	15703	15358	15016	14676	14339	
24	17465	17105	16749	16396	16045	15697	15353	15010	14671	14334	
25	17460	17099	16743	16390	16039	15692	15347	15005	14665	14328	
26	17453	17093	16737	16384	16034	15686	15341	14999	14659	14323	
27	17447	17087	16731	16378	16028	15680	15335	14993	14654	14317	
28	17441	17082	16725	16372	16022	15674	15330	14988	14648	14311	
29	17435	17076	16720	16366	16016	15669	15324	14982	14643	14306	
30	17429	17070	16714	16361	16010	15663	15318	14976	14637	14300	
31	17423	17064	16708	16354	16005	15657	15312	14971	14631	14295	
32	17417	17058	16702	16349	15999	15651	15307	14965	14626	14289	
33	17411	17052	16696	16343	15993	15646	15301	14959	14620	14284	
34	17405	17046	16690	16337	15987	15640	15295	14954	14614	14278	
35	17399	17040	16684	16331	15981	15634	15290	14948	14609	14272	
36	17393	17034	16678	16325	15975	15628	15284	14942	14603	14267	
37	17387	17028	16672	16320	15970	15623	15278	14937	14598	14261	
38	17381	17022	16666	16314	15964	15617	15272	14931	14592	14256	
39	17375	17016	16660	16308	15958	15611	15267	14925	14586	14250	
40	17369	17010	16655	16302	15952	15605	15261	14919	14581	14244	
41	17363	17004	16649	16296	15946	15599	15255	14914	14575	14239	
42	17357	16998	16643	16290	15941	15594	15250	14908	14569	14233	
43	17351	16992	16637	16284	15935	15588	15244	14902	14564	14228	
44	17345	16986	16631	16279	15929	15582	15238	14897	14558	14222	
45	17339	16980	16625	16273	15923	15576	15232	14891	14553	14217	
46	17333	16974	16619	16267	15917	15571	15227	14886	14547	14211	
47	17327	16968	16613	16261	15912	15565	15221	14880	14541	14205	
48	17321	16963	16607	16255	15906	15559	15215	14874	14536	14200	
49	17315	16957	16602	16249	15900	15553	15210	14869	14530	14194	
50	17309	16951	16596	16243	15894	15548	15204	14863	14524	14189	
51	17303	16945	16590	16238	15888	15542	15198	14857	14519	14183	
52	17297	16939	16584	16232	15883	15536	15192	14852	14513	14177	
53	17291	16933	16578	16226	15877	15530	15187	14846	14508	14172	
54	17285	16927	16572	16220	15871	15525	15181	14840	14502	14166	
55	17279	16921	16566	16214	15865	15519	15175	14835	14496	14161	
56	17273	16915	16560	16208	15859	15513	15170	14829	14491	14155	
57	17267	16909	16554	16203	15854	15507	15164	14823	14485	14150	
58	17261	16903	16549	16197	15848	15502	15158	14818	14480	14144	
59	17255	16897	16543	16191	15842	15496	15153	14812	14474	14138	

2° or 2°.

PROP. LOGARITHMS. (r.)

2° or 2°.

	10'	11	12'	13'	14'	15'	16'	17'	18'	19'
0	.14133	.13800	.13470	.13142	.12817	.12494	.12173	.11855	.11539	.11226
1	.14127	.13795	.13464	.13137	.12811	.12489	.12168	.11850	.11534	.11221
2	.14122	.13789	.13459	.13131	.12806	.12483	.12163	.11845	.11529	.11215
3	.14116	.13784	.13453	.13126	.12801	.12478	.12157	.11839	.11524	.11210
4	.14111	.13778	.13448	.13120	.12795	.12472	.12152	.11834	.11518	.11205
5	.14105	.13773	.13442	.13115	.12790	.12467	.12147	.11829	.11513	.11200
6	.14100	.13767	.13437	.13109	.12784	.12462	.12141	.11824	.11508	.11195
7	.14094	.13761	.13431	.13104	.12779	.12456	.12136	.11818	.11503	.11189
8	.14088	.13756	.13426	.13099	.12774	.12451	.12131	.11813	.11497	.11184
9	.14083	.13750	.13421	.13093	.12768	.12446	.12125	.11808	.11492	.11179
10	.14077	.13745	.13415	.13088	.12763	.12440	.12120	.11802	.11487	.11174
11	.14072	.13739	.13410	.13082	.12757	.12435	.12115	.11797	.11482	.11169
12	.14066	.13734	.13404	.13077	.12752	.12430	.12110	.11792	.11476	.11163
13	.14061	.13728	.13399	.13071	.12747	.12424	.12104	.11787	.11471	.11158
14	.14055	.13723	.13393	.13066	.12741	.12419	.12099	.11781	.11466	.11153
15	.14049	.13717	.13388	.13061	.12736	.12414	.12094	.11776	.11461	.11148
16	.14044	.13712	.13382	.13055	.12730	.12408	.12088	.11771	.11456	.11143
17	.14038	.13706	.13377	.13050	.12725	.12403	.12083	.11765	.11450	.11137
18	.14033	.13701	.13371	.13044	.12720	.12397	.12078	.11760	.11445	.11132
19	.14027	.13695	.13366	.13039	.12714	.12392	.12072	.11755	.11440	.11127
20	.14022	.13690	.13360	.13033	.12709	.12387	.12067	.11750	.11435	.11122
21	.14016	.13684	.13355	.13028	.12703	.12381	.12062	.11744	.11429	.11117
22	.14011	.13679	.13349	.13023	.12698	.12376	.12056	.11739	.11424	.11111
23	.14005	.13673	.13344	.13017	.12693	.12371	.12051	.11734	.11419	.11106
24	.13999	.13668	.13338	.13012	.12687	.12365	.12046	.11729	.11414	.11101
25	.13994	.13662	.13333	.13006	.12682	.12360	.12041	.11723	.11408	.11096
26	.13988	.13657	.13328	.13001	.12677	.12355	.12035	.11718	.11403	.11091
27	.13983	.13651	.13322	.12995	.12671	.12349	.12030	.11713	.11398	.11086
28	.13977	.13646	.13317	.12990	.12666	.12344	.12025	.11708	.11393	.11080
29	.13972	.13640	.13311	.12985	.12660	.12339	.12019	.11702	.11387	.11075
30	.13966	.13635	.13306	.12979	.12655	.12333	.12014	.11697	.11382	.11070
31	.13961	.13629	.13300	.12974	.12650	.12328	.12009	.11692	.11377	.11065
32	.13955	.13624	.13295	.12968	.12644	.12323	.12003	.11686	.11372	.11059
33	.13949	.13618	.13289	.12963	.12639	.12317	.11998	.11681	.11367	.11054
34	.13944	.13613	.13284	.12957	.12634	.12312	.11993	.11676	.11361	.11049
35	.13938	.13607	.13278	.12952	.12628	.12307	.11987	.11671	.11356	.11044
36	.13933	.13602	.13273	.12947	.12623	.12301	.11982	.11665	.11351	.11039
37	.13927	.13596	.13267	.12941	.12617	.12296	.11977	.11660	.11346	.11034
38	.13922	.13591	.13262	.12936	.12612	.12291	.11972	.11655	.11340	.11028
39	.13916	.13585	.13257	.12930	.12607	.12285	.11966	.11650	.11335	.11023
40	.13911	.13580	.13251	.12925	.12601	.12280	.11961	.11644	.11330	.11018
41	.13905	.13574	.13246	.12920	.12596	.12275	.11956	.11639	.11325	.11013
42	.13900	.13569	.13240	.12914	.12590	.12269	.11950	.11634	.11320	.11008
43	.13894	.13563	.13235	.12909	.12585	.12264	.11945	.11629	.11314	.11002
44	.13889	.13558	.13229	.12903	.12580	.12259	.11940	.11623	.11309	.10997
45	.13883	.13552	.13224	.12898	.12574	.12253	.11935	.11618	.11304	.10992
46	.13878	.13547	.13218	.12892	.12569	.12248	.11929	.11613	.11299	.10987
47	.13872	.13541	.13213	.12887	.12564	.12243	.11924	.11608	.11294	.10982
48	.13866	.13536	.13207	.12882	.12558	.12237	.11919	.11603	.11288	.10977
49	.13861	.13530	.13202	.12876	.12553	.12232	.11913	.11597	.11283	.10971
50	.13855	.13525	.13197	.12871	.12548	.12227	.11908	.11592	.11278	.10966
51	.13850	.13519	.13191	.12865	.12542	.12221	.11903	.11587	.11273	.10961
52	.13844	.13514	.13186	.12860	.12537	.12216	.11897	.11581	.11267	.10956
53	.13839	.13508	.13180	.12855	.12531	.12211	.11892	.11576	.11262	.10951
54	.13833	.13503	.13175	.12849	.12526	.12205	.11887	.11571	.11257	.10945
55	.13828	.13497	.13169	.12844	.12521	.12200	.11882	.11566	.11252	.10940
56	.13822	.13492	.13164	.12838	.12515	.12195	.11876	.11560	.11247	.10935
57	.13817	.13486	.13158	.12833	.12510	.12189	.11871	.11555	.11241	.10930
58	.13811	.13481	.13153	.12828	.12505	.12184	.11866	.11550	.11236	.10925
59	.13806	.13475	.13148	.12822	.12499	.12179	.11860	.11545	.11231	.10920

2 ^h or 2 ^o .		PROP. LOGARITHMS. (r.)									2 ^h or 2 ^o .
N	20'	21'	22'	23'	24'	25'	26'	27'	28'	29'	
0	.10914	.10605	.10298	.09994	.09691	.09390	.09092	.08796	.08501	.08209	
1	.10909	.10600	.10293	.09989	.09686	.09385	.09087	.08791	.08496	.08204	
2	.10904	.10595	.10288	.09984	.09681	.09380	.09082	.08786	.08491	.08199	
3	.10899	.10590	.10283	.09978	.09676	.09375	.09077	.08781	.08486	.08194	
4	.10894	.10585	.10278	.09973	.09671	.09370	.09072	.08776	.08482	.08189	
5	.10889	.10580	.10273	.09968	.09666	.09365	.09067	.08771	.08477	.08184	
6	.10883	.10575	.10268	.09963	.09661	.09360	.09062	.08766	.08472	.08179	
7	.10879	.10569	.10263	.09958	.09656	.09356	.09057	.08761	.08467	.08175	
8	.10873	.10564	.10258	.09953	.09651	.09351	.09052	.08756	.08462	.08170	
9	.10868	.10559	.10253	.09948	.09646	.09346	.09047	.08751	.08457	.08165	
10	.10863	.10554	.10247	.09943	.09641	.09341	.09042	.08746	.08452	.08160	
11	.10858	.10549	.10242	.09938	.09636	.09336	.09037	.08741	.08447	.08155	
12	.10852	.10544	.10237	.09933	.09631	.09331	.09033	.08736	.08442	.08150	
13	.10847	.10539	.10232	.09928	.09626	.09326	.09028	.08732	.08438	.08146	
14	.10842	.10534	.10227	.09923	.09621	.09321	.09023	.08727	.08433	.08141	
15	.10837	.10528	.10222	.09918	.09616	.09316	.09018	.08722	.08428	.08136	
16	.10832	.10523	.10217	.09913	.09611	.09311	.09013	.08717	.08423	.08131	
17	.10827	.10518	.10212	.09908	.09606	.09306	.09008	.08712	.08418	.08126	
18	.10821	.10513	.10207	.09903	.09601	.09301	.09003	.08707	.08413	.08121	
19	.10816	.10508	.10202	.09898	.09596	.09296	.08998	.08702	.08408	.08116	
20	.10811	.10503	.10197	.09893	.09591	.09291	.08993	.08697	.08403	.08112	
21	.10806	.10498	.10192	.09887	.09586	.09286	.08988	.08692	.08398	.08107	
22	.10801	.10493	.10186	.09882	.09581	.09281	.08983	.08687	.08394	.08102	
23	.10796	.10487	.10181	.09877	.09576	.09276	.08978	.08682	.08389	.08097	
24	.10791	.10482	.10176	.09872	.09571	.09271	.08973	.08678	.08384	.08092	
25	.10785	.10477	.10171	.09867	.09566	.09266	.08968	.08673	.08379	.08087	
26	.10780	.10472	.10166	.09862	.09561	.09261	.08963	.08668	.08374	.08083	
27	.10775	.10467	.10161	.09857	.09556	.09256	.08958	.08663	.08369	.08078	
28	.10770	.10462	.10156	.09852	.09550	.09251	.08953	.08658	.08364	.08073	
29	.10765	.10457	.10151	.09847	.09545	.09246	.08948	.08653	.08359	.08068	
30	.10760	.10452	.10146	.09842	.09540	.09241	.08943	.08648	.08355	.08063	
31	.10754	.10447	.10141	.09837	.09535	.09236	.08939	.08643	.08350	.08058	
32	.10749	.10441	.10136	.09832	.09530	.09231	.08934	.08638	.08345	.08053	
33	.10744	.10436	.10131	.09827	.09525	.09226	.08929	.08633	.08340	.08049	
34	.10739	.10431	.10126	.09822	.09520	.09221	.08924	.08628	.08335	.08044	
35	.10734	.10426	.10120	.09817	.09515	.09216	.08919	.08624	.08330	.08039	
36	.10729	.10421	.10115	.09812	.09510	.09211	.08914	.08619	.08325	.08034	
37	.10724	.10416	.10110	.09807	.09505	.09206	.08909	.08614	.08320	.08029	
38	.10719	.10411	.10105	.09802	.09500	.09201	.08904	.08609	.08316	.08024	
39	.10713	.10406	.10100	.09797	.09495	.09196	.08899	.08604	.08311	.08020	
40	.10708	.10400	.10095	.09792	.09490	.09191	.08894	.08599	.08306	.08015	
41	.10703	.10395	.10090	.09787	.09485	.09186	.08889	.08594	.08301	.08010	
42	.10698	.10390	.10085	.09782	.09480	.09181	.08884	.08589	.08296	.08005	
43	.10693	.10385	.10080	.09777	.09475	.09176	.08879	.08584	.08291	.08000	
44	.10688	.10380	.10075	.09772	.09470	.09171	.08874	.08579	.08286	.07995	
45	.10682	.10375	.10070	.09766	.09465	.09166		.08573	.08282	.07991	
46	.10677	.10370	.10065	.09761	.09460	.09161	.08865	.08570	.08277	.07986	
47	.10672	.10365	.10059	.09756	.09455	.09156	.08860	.08565	.08272	.07981	
48	.10667	.10360	.10054	.09751	.09450	.09151	.08855	.08560	.08267	.07976	
49	.10662	.10355	.10049	.09746	.09445	.09147	.08850	.08555	.08262	.07971	
50	.10657	.10349	.10044	.09741	.09440	.09142	.08845	.08550	.08257	.07966	
51	.10652	.10344	.10039	.09736	.09435	.09137	.08840	.08545	.08252	.07962	
52	.10646	.10339	.10034	.09731	.09430	.09132	.08835	.08540	.08248	.07957	
53	.10641	.10334	.10029	.09726	.09425	.09127	.08830	.08535	.08243	.07952	
54	.10636	.10329	.10024	.09721	.09420	.09122	.08825	.08530	.08238	.07947	
55	.10631	.10324	.10019	.09716	.09415	.09117	.08820	.08526	.08233	.07942	
56	.10626	.10319	.10014	.09711	.09410	.09112	.08815	.08521	.08228	.07937	
57	.10621	.10314	.10009	.09706	.09405	.09107	.08810	.08516	.08223	.07933	
58	.10616	.10309	.10004	.09701	.09400	.09102	.08805	.08511	.08218	.07928	
59	.10610	.10304	.09999	.09696	.09395	.09097	.08800	.08506	.08213	.07923	

2° or 2'		PROP. LOGARITHMS. (r.)									2° or 2'
°	30'	31'	32'	33'	34'	35'	36'	37'	38'	39'	
0	.07918	.07630	.07343	.07058	.06775	.06494	.06215	.05937	.05662	.05388	
1	.07913	.07625	.07338	.07053	.06770	.06489	.06210	.05933	.05657	.05383	
2	.07908	.07620	.07333	.07049	.06766	.06485	.06206	.05928	.05652	.05378	
3	.07904	.07615	.07329	.07044	.06761	.06480	.06201	.05923	.05648	.05374	
4	.07899	.07610	.07324	.07039	.06756	.06475	.06196	.05919	.05643	.05369	
5	.07894	.07606	.07319	.07034	.06752	.06471	.06192	.05914	.05639	.05365	
6	.07889	.07601	.07314	.07030	.06747	.06466	.06187	.05910	.05634	.05360	
7	.07884	.07596	.07310	.07025	.06742	.06461	.06182	.05905	.05629	.05355	
8	.07880	.07591	.07305	.07020	.06738	.06457	.06178	.05900	.05625	.05351	
9	.07875	.07586	.07300	.07016	.06733	.06452	.06173	.05895	.05620	.05347	
10	.07870	.07582	.07295	.07011	.06728	.06447	.06168	.05891	.05616	.05342	
11	.07865	.07577	.07291	.07006	.06724	.06443	.06164	.05887	.05611	.05337	
12	.07860	.07572	.07286	.07001	.06719	.06438	.06159	.05882	.05607	.05333	
13	.07855	.07567	.07281	.06997	.06714	.06433	.06155	.05877	.05602	.05328	
14	.07851	.07562	.07276	.06992	.06709	.06429	.06150	.05873	.05597	.05324	
15	.07846	.07558	.07272	.06987	.06705	.06424	.06145	.05868	.05593	.05319	
16	.07841	.07553	.07267	.06982	.06700	.06419	.06141	.05864	.05588	.05315	
17	.07836	.07548	.07262	.06978	.06695	.06415	.06136	.05859	.05584	.05310	
18	.07831	.07543	.07257	.06973	.06691	.06410	.06131	.05854	.05579	.05306	
19	.07827	.07539	.07253	.06968	.06686	.06405	.06127	.05850	.05575	.05301	
20	.07822	.07534	.07248	.06964	.06681	.06401	.06122	.05845	.05570	.05297	
21	.07817	.07529	.07243	.06959	.06677	.06396	.06117	.05841	.05565	.05292	
22	.07812	.07524	.07238	.06954	.06672	.06391	.06113	.05836	.05561	.05288	
23	.07807	.07519	.07234	.06949	.06667	.06387	.06108	.05831	.05556	.05283	
24	.07802	.07515	.07229	.06945	.06663	.06382	.06104	.05827	.05552	.05278	
25	.07798	.07510	.07224	.06940	.06658	.06377	.06099	.05822	.05547	.05274	
26	.07793	.07505	.07219	.06935	.06653	.06373	.06094	.05818	.05543	.05269	
27	.07788	.07500	.07215	.06931	.06648	.06368	.06090	.05813	.05538	.05265	
28	.07783	.07496	.07210	.06926	.06644	.06364	.06085	.05808	.05533	.05260	
29	.07778	.07491	.07205	.06921	.06639	.06359	.06080	.05804	.05529	.05256	
30	.07774	.07486	.07200	.06916	.06634	.06354	.06076	.05799	.05524	.05251	
31	.07769	.07481	.07195	.06912	.06630	.06350	.06071	.05795	.05520	.05247	
32	.07764	.07476	.07191	.06907	.06625	.06345	.06067	.05790	.05515	.05242	
33	.07759	.07472	.07186	.06902	.06620	.06340	.06062	.05785	.05511	.05238	
34	.07754	.07467	.07181	.06898	.06616	.06336	.06057	.05781	.05506	.05233	
35	.07750	.07462	.07177	.06893	.06611	.06331	.06053	.05776	.05501	.05229	
36	.07745	.07457	.07172	.06888	.06606	.06326	.06048	.05772	.05497	.05224	
37	.07740	.07453	.07167	.06883	.06602	.06322	.06043	.05767	.05492	.05219	
38	.07735	.07448	.07162	.06879	.06597	.06317	.06039	.05762	.05488	.05215	
39	.07730	.07443	.07158	.06874	.06592	.06312	.06034	.05758	.05483	.05210	
40	.07726	.07438	.07153	.06869	.06588	.06308	.06030	.05753	.05479	.05206	
41	.07721	.07433	.07148	.06865	.06583	.06303	.06025	.05749	.05474	.05201	
42	.07716	.07429	.07143	.06860	.06578	.06298	.06020	.05744	.05470	.05197	
43	.07711	.07424	.07139	.06855	.06574	.06294	.06016	.05739	.05465	.05192	
44	.07706	.07419	.07134	.06850	.06569	.06289	.06011	.05735	.05460	.05188	
45	.07702	.07414	.07129	.06846	.06564	.06284	.06006	.05730	.05456	.05183	
46	.07697	.07410	.07124	.06841	.06559	.06280	.06002	.05726	.05451	.05179	
47	.07692	.07405	.07120	.06836	.06555	.06275	.05997	.05721	.05447	.05174	
48	.07687	.07400	.07115	.06832	.06550	.06271	.05993	.05717	.05442	.05170	
49	.07682	.07395	.07110	.06827	.06545	.06266	.05988	.05712	.05438	.05165	
50	.07678	.07391	.07105	.06822	.06541	.06261	.05983	.05707	.05433	.05161	
51	.07673	.07386	.07101	.06817	.06536	.06257	.05979	.05703	.05429	.05156	
52	.07668	.07381	.07096	.06813	.06531	.06252	.05974	.05698	.05424	.05151	
53	.07663	.07376	.07091	.06808	.06527	.06247	.05970	.05694	.05419	.05147	
54	.07658	.07371	.07087	.06803	.06522	.06243	.05965	.05689	.05415	.05142	
55	.07654	.07367	.07082	.06799	.06517	.06238	.05960	.05684	.05410	.05138	
56	.07649	.07362	.07077	.06794	.06513	.06233	.05956	.05680	.05406	.05133	
57	.07644	.07357	.07072	.06789	.06508	.06229	.05951	.05675	.05401	.05129	
58	.07639	.07352	.07068	.06784	.06503	.06224	.05947	.05671	.05397	.05124	
59	.07634	.07348	.07063	.06780	.06499	.06219	.05942	.05666	.05392	.05120	

2° or 2'		PROP. LOGARITHMS. (r.)									2° or 2'
"	40'	41'	42'	43'	44'	45'	46'	47'	48'	49'	
0	.05115	.04815	.04576	.04308	.04043	.03779	.03516	.03256	.02996	.02739	
1	.05111	.04810	.04571	.04304	.04038	.03774	.03512	.03251	.02992	.02734	
2	.05106	.04806	.04567	.04300	.04034	.03770	.03508	.03247	.02988	.02730	
3	.05102	.04801	.04562	.04295	.04030	.03766	.03503	.03243	.02983	.02726	
4	.05097	.04797	.04558	.04291	.04025	.03761	.03499	.03238	.02979	.02721	
5	.05093	.04792	.04553	.04286	.04021	.03757	.03495	.03234	.02975	.02717	
6	.05088	.04788	.04549	.04282	.04016	.03753	.03490	.03230	.02970	.02713	
7	.05084	.04783	.04544	.04277	.04012	.03748	.03486	.03225	.02966	.02709	
8	.05079	.04779	.04540	.04273	.04008	.03744	.03482	.03221	.02962	.02704	
9	.05075	.04775	.04536	.04269	.04003	.03739	.03477	.03217	.02958	.02700	
10	.05070	.04770	.04531	.04264	.03999	.03735	.03473	.03212	.02953	.02696	
11	.05066	.04766	.04527	.04260	.03994	.03731	.03469	.03208	.02949	.02691	
12	.05061	.04761	.04522	.04255	.03990	.03726	.03464	.03204	.02945	.02687	
13	.05056	.04756	.04518	.04251	.03986	.03722	.03460	.03199	.02940	.02683	
14	.05052	.04752	.04513	.04246	.03981	.03717	.03455	.03195	.02936	.02679	
15	.05047	.04747	.04509	.04242	.03977	.03713	.03451	.03191	.02932	.02674	
16	.05043	.04743	.04504	.04237	.03972	.03709	.03447	.03186	.02927	.02670	
17	.05038	.04738	.04500	.04233	.03968	.03704	.03442	.03182	.02923	.02666	
18	.05034	.04734	.04495	.04229	.03963	.03700	.03438	.03178	.02919	.02662	
19	.05029	.04729	.04491	.04224	.03959	.03696	.03434	.03173	.02914	.02657	
20	.05025	.04725	.04486	.04220	.03955	.03691	.03429	.03169	.02910	.02653	
21	.05020	.04720	.04482	.04215	.03950	.03687	.03425	.03165	.02906	.02649	
22	.05016	.04716	.04478	.04211	.03946	.03682	.03421	.03160	.02902	.02644	
23	.05011	.04711	.04473	.04206	.03941	.03678	.03416	.03156	.02897	.02640	
24	.05007	.04707	.04469	.04202	.03937	.03674	.03412	.03152	.02893	.02636	
25	.05002	.04702	.04464	.04198	.03933	.03669	.03408	.03147	.02889	.02632	
26	.04998	.04698	.04460	.04193	.03928	.03665	.03403	.03143	.02884	.02627	
27	.04993	.04693	.04455	.04189	.03924	.03661	.03399	.03139	.02880	.02623	
28	.04989	.04689	.04451	.04184	.03919	.03656	.03395	.03134	.02876	.02619	
29	.04984	.04684	.04446	.04180	.03915	.03652	.03390	.03130	.02872	.02615	
30	.04980	.04680	.04442	.04175	.03911	.03647	.03386	.03126	.02867	.02610	
31	.04975	.04675	.04437	.04171	.03906	.03643	.03381	.03121	.02863	.02606	
32	.04971	.04671	.04433	.04167	.03902	.03639	.03377	.03117	.02859	.02602	
33	.04966	.04666	.04429	.04162	.03897	.03634	.03373	.03113	.02854	.02598	
34	.04962	.04662	.04424	.04158	.03893	.03630	.03368	.03108	.02850	.02593	
35	.04957	.04657	.04420	.04153	.03889	.03626	.03364	.03104	.02846	.02589	
36	.04953	.04653	.04415	.04149	.03884	.03621	.03360	.03100	.02841	.02585	
37	.04948	.04648	.04411	.04144	.03880	.03617	.03355	.03096	.02837	.02580	
38	.04944	.04644	.04406	.04140	.03875	.03612	.03351	.03091	.02833	.02576	
39	.04939	.04639	.04402	.04136	.03871	.03608	.03347	.03087	.02829	.02572	
40	.04935	.04635	.04397	.04131	.03867	.03604	.03342	.03083	.02824	.02568	
41	.04930	.04630	.04393	.04127	.03862	.03599	.03338	.03078	.02820	.02563	
42	.04926	.04626	.04388	.04123	.03858	.03595	.03334	.03074	.02816	.02559	
43	.04921	.04621	.04384	.04118	.03853	.03591	.03329	.03070	.02811	.02555	
44	.04917	.04617	.04380	.04114	.03849	.03586	.03325	.03065	.02807	.02551	
45	.04912	.04612	.04375	.04109	.03845	.03582	.03321	.03061	.02803	.02546	
46	.04908	.04608	.04371	.04105	.03840	.03578	.03316	.03057	.02799	.02542	
47	.04903	.04603	.04366	.04100	.03836	.03573	.03312	.03052	.02794	.02538	
48	.04899	.04599	.04362	.04096	.03832	.03569	.03308	.03048	.02790	.02533	
49	.04894	.04594	.04357	.04091	.03827	.03564	.03303	.03043	.02786	.02529	
50	.04890	.04590	.04353	.04087	.03823	.03560	.03299	.03039	.02781	.02525	
51	.04885	.04585	.04348	.04083	.03818	.03556	.03295	.03035	.02777	.02521	
52	.04881	.04581	.04344	.04078	.03814	.03551	.03290	.03031	.02773	.02516	
53	.04876	.04576	.04340	.04074	.03810	.03547	.03286	.03026	.02769	.02512	
54	.04872	.04572	.04335	.04069	.03805	.03543	.03282	.03022	.02764	.02508	
55	.04867	.04567	.04331	.04065	.03801	.03538	.03277	.03018	.02760	.02504	
56	.04863	.04563	.04326	.04061	.03796	.03534	.03273	.03014	.02756	.02499	
57	.04858	.04558	.04322	.04056	.03792	.03530	.03269	.03009	.02751	.02495	
58	.04854	.04554	.04317	.04052	.03788	.03525	.03264	.03005	.02747	.02491	
59	.04849	.04549	.04313	.04047	.03783	.03521	.03260	.03001	.02743	.02487	

2° or 2°.		PROP. LOGARITHMS. (r.)								2° or 2°.	
#	50'	51'	52'	53'	54'	55'	56'	57'			
0	.02482	.02228	.01974	.01723	.01472	.01223	.00976	.00730	.00485	.00242	
1	.02478	.02223	.01970	.01718	.01468	.01219	.00972	.00726	.00481	.00238	
2	.02474	.02219	.01966	.01714	.01464	.01215	.00968	.00722	.00477	.00234	
3	.02470	.02215	.01962	.01710	.01460	.01211	.00964	.00718	.00473	.00230	
4	.02465	.02211	.01958	.01706	.01456	.01207	.00960	.00714	.00469	.00226	
5	.02461	.02206	.01953	.01702	.01452	.01203	.00955	.00709	.00465	.00222	
6	.02457	.02202	.01949	.01698	.01447	.01199	.00951	.00705	.00461	.00218	
7	.02453	.02198	.01945	.01693	.01443	.01195	.00947	.00701	.00457	.00214	
8	.02448	.02194	.01941	.01689	.01439	.01190	.00943	.00697	.00453	.00210	
9	.02444	.02190	.01937	.01685	.01435	.01186	.00939	.00693	.00449	.00206	
10	.02440	.02185	.01932	.01681	.01431	.01182	.00935	.00689	.00445	.00202	
11	.02436	.02181	.01928	.01677	.01427	.01179	.00931	.00685	.00441	.00197	
12	.02431	.02177	.01924	.01672	.01422	.01174	.00927	.00681	.00436	.00193	
13	.02427	.02173	.01920	.01668	.01418	.01170	.00923	.00677	.00432	.00189	
14	.02423	.02168	.01916	.01664	.01414	.01166	.00918	.00673	.00428	.00185	
15	.02419	.02164	.01911	.01660	.01410	.01161	.00914	.00669	.00424	.00181	
16	.02414	.02160	.01907	.01656	.01406	.01157	.00910	.00665	.00420	.00177	
17	.02410	.02156	.01903	.01652	.01402	.01153	.00906	.00660	.00416	.00173	
18	.02406	.02152	.01899	.01647	.01398	.01149	.00902	.00656	.00412	.00169	
19	.02402	.02147	.01895	.01643	.01393	.01145	.00898	.00652	.00408	.00165	
20	.02397	.02143	.01890	.01639	.01389	.01141	.00894	.00648	.00404	.00161	
21	.02393	.02139	.01886	.01635	.01385	.01137	.00890	.00644	.00400	.00157	
22	.02389	.02135	.01882	.01631	.01381	.01133	.00886	.00640	.00396	.00153	
23	.02385	.02130	.01878	.01627	.01377	.01128	.00882	.00636	.00392	.00149	
24	.02380	.02126	.01874	.01622	.01373	.01124	.00877	.00632	.00388	.00145	
25	.02376	.02122	.01869	.01618	.01368	.01120	.00873	.00628	.00384	.00141	
26	.02372	.02118	.01865	.01614	.01364	.01116	.00869	.00624	.00380	.00137	
27	.02368	.02114	.01861	.01610	.01360	.01112	.00865	.00620	.00376	.00133	
28		.02109	.01857	.01606	.01356	.01108	.00861	.00616	.00372	.00129	
29		.02105	.01853	.01601	.01352	.01104	.00857	.00611	.00367	.00125	
30	.02355	.02101	.01848	.01597	.01348	.01100	.00853	.00607	.00363	.00121	
31	.02351	.02097	.01844	.01593	.01344	.01095	.00849	.00603	.00359	.00117	
32	.02346	.02092	.01840	.01589	.01339	.01091	.00845	.00599	.00355	.00113	
33	.02342	.02088	.01836	.01585	.01335	.01087	.00840	.00595	.00351	.00109	
34	.02338	.02084	.01832	.01581	.01331	.01083	.00836	.00591	.00347	.00105	
35	.02334	.02080	.01827	.01576	.01327	.01079	.00832	.00587	.00343	.00101	
36	.02329	.02076	.01823	.01572	.01323	.01075	.00828	.00583	.00339	.00097	
37	.02325	.02071	.01819	.01568	.01319	.01071	.00824	.00579	.00335	.00093	
38	.02321	.02067	.01815	.01564	.01315	.01067	.00820	.00575	.00331	.00089	
39	.02317	.02063	.01811	.01560	.01310	.01062	.00816	.00571	.00327	.00085	
40	.02312	.02059	.01806	.01556	.01306	.01058	.00812	.00567	.00323	.00080	
41	.02308	.02054	.01802	.01551	.01302	.01054	.00808	.00563	.00319	.00076	
42	.02304	.02050	.01798	.01547	.01298	.01050	.00804	.00559	.00315	.00072	
43	.02300	.02046	.01794	.01543	.01294	.01046	.00799	.00554	.00311	.00068	
44	.02295	.02042	.01790	.01539	.01290	.01042	.00795	.00550	.00307	.00064	
45	.02291	.02038	.01785	.01535	.01286	.01038	.00791	.00546	.00303	.00060	
46	.02287	.02033	.01781	.01531	.01281	.01034	.00787	.00542	.00299	.00056	
47	.02282	.02029	.01777	.01526	.01277	.01029	.00783	.00538	.00295	.00052	
48	.02278	.02025	.01773	.01522	.01273	.01025	.00779	.00534	.00290	.00048	
49	.02274	.02021	.01769	.01518	.01269	.01021	.00775	.00530	.00286	.00044	
50	.02270	.02017	.01764	.01514	.01265	.01017	.00771	.00526	.00282	.00040	
51	.02266	.02012	.01760	.01510	.01261	.01013	.00767	.00522	.00278	.00036	
52	.02262	.02008	.01756	.01506	.01257	.01009	.00763	.00518	.00274	.00032	
53	.02257	.02004	.01752	.01501	.01252	.01005	.00759	.00514	.00270	.00028	
54	.02253	.02000	.01748	.01497	.01248	.01001	.00754	.00510	.00266	.00024	
55	.02249	.01995	.01744	.01493	.01244	.00997	.00750	.00506	.00262	.00020	
56	.02245	.01991	.01739	.01489	.01240	.00992	.00746	.00502	.00258	.00016	
57	.02240	.01987	.01735	.01485	.01236	.00988	.00742	.00497	.00254	.00012	
58	.02236	.01983	.01731	.01481	.01232	.00984	.00738	.00493	.00250	.00008	
59	.02232	.01979	.01727	.01476	.01228	.00980	.00734	.00489	.00246	.00004	

LOG. SINE TO SECONDS. (A.)

"	0° 0'	0° 1'	0° 2'	0° 3'	0° 4'	0° 5'	0° 6'	0° 7'	0° 8'	0° 9'	"
0		6 463726	7 647750	6 940947	7 065786	7 162696	7 241877	7 308824	7 366816	7 417968	60
1	685575	6 470905	6 768360	6 943253	7 067592	7 164141	7 243082	7 309857	7 367719	7 418772	59
2	986605	6 477966	6 771935	6 945646	7 069390	7 165582	7 244283	7 310887	7 368621	7 419574	58
3	162696	6 484915	6 775480	6 948026	7 071181	7 167017	7 245481	7 311915	7 369522	7 420374	57
4	287635	6 491755	6 779996	6 950393	7 072965	7 168418	7 246676	7 312940	7 370420	7 421173	56
5	384515	6 498485	6 782485	6 952746	7 074741	7 169874	7 247867	7 313963	7 371316	7 421971	55
6	463726	6 505119	6 785945	6 955088	7 076510	7 171296	7 249056	7 314984	7 372211	7 422767	54
7	530673	6 511650	6 789379	6 957116	7 078272	7 172713	7 250241	7 316002	7 373103	7 423562	53
8	588665	6 518084	6 792785	6 959733	7 080026	7 174125	7 251422	7 317018	7 373994	7 424355	52
9	639817	6 524424	6 796164	6 962037	7 081774	7 175533	7 252601	7 318032	7 374883	7 425147	51
10	685575	6 530673	6 799518	6 964328	7 083515	7 176936	7 253776	7 319043	7 375770	7 425937	50
11	726968	6 536833	6 802846	6 966606	7 085248	7 178335	7 254918	7 320052	7 376656	7 426726	49
12	764736	6 542907	6 806149	6 968876	7 086975	7 179729	7 256118	7 321058	7 377540	7 427513	48
13	799518	6 548894	6 809426	6 971132	7 088695	7 181119	7 257283	7 322062	7 378421	7 428299	47
14	831703	6 554807	6 812680	6 973376	7 090408	7 182504	7 258416	7 323064	7 379301	7 429084	46
15	861666	6 560636	6 815909	6 975609	7 092115	7 183885	7 259606	7 324064	7 380180	7 429867	45
16	889695	6 566388	6 819114	6 977831	7 093815	7 185262	7 260762	7 325061	7 381056	7 430649	44
17	916024	6 572066	6 822295	6 980041	7 095508	7 186634	7 261916	7 326066	7 381931	7 431429	43
18	940847	6 577669	6 825454	6 982240	7 097194	7 188002	7 263066	7 327049	7 382804	7 432208	42
19	964328	6 583202	6 828590	6 984428	7 098874	7 189365	7 264214	7 328039	7 383675	7 432986	41
20	986605	6 588665	6 831703	6 986606	7 100518	7 190725	7 265358	7 329027	7 384544	7 433762	40
21	007794	6 594060	6 834794	6 988771	7 102215	7 192080	7 266500	7 330013	7 385412	7 434537	39
22	027997	6 599389	6 837863	6 990926	7 103876	7 193431	7 267638	7 330997	7 386278	7 435311	38
23	047303	6 604653	6 840911	6 993071	7 105530	7 194777	7 268773	7 331978	7 387142	7 436083	37
24	065786	6 609851	6 843937	6 995205	7 107179	7 196120	7 269906	7 332957	7 388005	7 436853	36
25	083515	6 614994	6 846943	6 997329	7 108821	7 197458	7 271035	7 333934	7 388866	7 437623	35
26	100548	6 620073	6 849928	6 999442	7 110456	7 198792	7 272162	7 334909	7 389725	7 438391	34
27	116939	6 625094	6 852992	7 001545	7 112086	7 200122	7 273286	7 335882	7 390582	7 439157	33
28	132733	6 630057	6 855836	7 003638	7 113709	7 201448	7 274406	7 336852	7 391438	7 439923	32
29	147973	6 634965	6 858761	7 005721	7 115327	7 202771	7 275524	7 337821	7 392292	7 440687	31
30	162696	6 639817	6 861666	7 007794	7 116939	7 204089	7 276639	7 338787	7 393145	7 441449	30
31	176937	6 644616	6 864552	7 009857	7 118544	7 205403	7 277751	7 339751	7 393995	7 442210	29
32	190725	6 649363	6 867418	7 011911	7 120144	7 206713	7 278861	7 340713	7 394844	7 442970	28
33	204089	6 654058	6 870266	7 013954	7 121737	7 208019	7 279967	7 341673	7 395692	7 443729	27
34	217054	6 658703	6 873095	7 015989	7 123325	7 209321	7 281071	7 342630	7 396537	7 444486	26
35	229643	6 663298	6 875906	7 018013	7 124907	7 210619	7 282172	7 343586	7 397382	7 445242	25
36	241877	6 667846	6 878699	7 020028	7 126484	7 211914	7 283270	7 344539	7 398224	7 445997	24
37	253777	6 672347	6 881474	7 022034	7 128054	7 213205	7 284365	7 345491	7 399065	7 446750	23
38	265358	6 676801	6 884232	7 024031	7 129619	7 214491	7 285458	7 346440	7 399904	7 447502	22
39	276639	6 681210	6 886972	7 026019	7 131179	7 215774	7 286547	7 347387	7 400742	7 448253	21
40	287635	6 685575	6 889695	7 027997	7 132731	7 217054	7 287635	7 348332	7 401578	7 449002	20
41	298359	6 689896	6 892401	7 029967	7 134281	7 218329	7 288719	7 349275	7 402412	7 449750	19
42	308824	6 694175	6 895090	7 031928	7 135824	7 219601	7 289801	7 350216	7 403245	7 450497	18
43	319043	6 698412	6 897762	7 033880	7 137361	7 220869	7 290880	7 351155	7 404076	7 451243	17
44	329027	6 702608	6 900419	7 035823	7 138893	7 222134	7 291956	7 352092	7 404906	7 451987	16
45	338787	6 706761	6 903059	7 037757	7 140420	7 223394	7 293030	7 352927	7 405734	7 452730	15
46	348334	6 710881	6 905683	7 039683	7 141941	7 224651	7 294101	7 353960	7 406560	7 453472	14
47	357673	6 714959	6 908291	7 041601	7 143457	7 225904	7 295169	7 354891	7 407385	7 454212	13
48	366816	6 718999	6 910884	7 043510	7 144967	7 227154	7 296235	7 355820	7 408208	7 454955	12
49	375771	6 723001	6 913461	7 045410	7 146473	7 228400	7 297298	7 356747	7 409030	7 455690	11
50	384545	6 726967	6 916024	7 047303	7 147973	7 229643	7 298358	7 357672	7 409850	7 456426	10
51	393143	6 730898	6 918571	7 049187	7 149468	7 230882	7 299416	7 358595	7 410669	7 457162	9
52	401578	6 734793	6 921103	7 051063	7 150958	7 232117	7 300472	7 359516	7 411486	7 457896	8
53	409851	6 738653	6 923641	7 052931	7 152442	7 233349	7 301525	7 360436	7 412302	7 458629	7
54	417969	6 742480	6 926124	7 054791	7 153922	7 234578	7 302575	7 361353	7 413116	7 459361	6
55	425938	6 746273	6 928613	7 056643	7 155397	7 235803	7 303621	7 362264	7 413928	7 460091	5
56	433763	6 750033	6 931087	7 058487	7 156866	7 237025	7 304668	7 363181	7 414739	7 460822	4
57	441450	6 753761	6 933548	7 060323	7 158331	7 238243	7 305711	7 364093	7 415549	7 461549	3
58	449003	6 757457	6 935995	7 062152	7 159791	7 239458	7 306751	7 365002	7 416357	7 462275	2
59	456427	6 761122	6 938428	7 063973	7 161246	7 240669	7 307789	7 365910	7 417163	7 463003	1
60	463726	6 764756	6 940847	7 065786	7 162696	7 241877	7 308824	7 366816	7 417968	7 463725	0
"	89° 59'	89° 56'	89° 57'	89° 56'	89° 55'	89° 54'	89° 53'	89° 52'	89° 51'	89° 50'	"

LOG. COSINE TO SECONDS.

LOG. SINE TO SECONDS. (a.)

	0° 10'	0° 11'	0° 12'	0° 13'	0° 14'	0° 15'	0° 16'	0° 17'	0° 18'	0° 19'	"
0	7.463725	7.505118	7.542906	7.577668	7.609853	7.639816	7.667844	7.694173	7.718997	7.742477	60
1	7.464449	7.505776	7.543509	7.578225	7.610370	7.640298	7.668297	7.694599	7.719399	7.742858	59
2	7.465171	7.506442	7.544111	7.578781	7.610896	7.640780	7.668748	7.695024	7.719800	7.743239	58
3	7.465892	7.507068	7.544712	7.579336	7.611401	7.641261	7.669200	7.695449	7.720201	7.743619	57
4	7.466611	7.507712	7.545312	7.579890	7.611916	7.641742	7.669650	7.695873	7.720602	7.743999	56
5	7.467330	7.508396	7.545912	7.580443	7.612430	7.642222	7.670101	7.696297	7.721003	7.744378	55
6	7.468047	7.509048	7.546511	7.580996	7.612944	7.642702	7.670560	7.696726	7.721403	7.744757	54
7	7.468763	7.509700	7.547108	7.581548	7.613457	7.643181	7.671000	7.697143	7.721802	7.745136	53
8	7.469478	7.510351	7.547705	7.582100	7.613969	7.643659	7.671449	7.697566	7.722202	7.745514	52
9	7.470191	7.511000	7.548301	7.582651	7.614481	7.644137	7.671897	7.697988	7.722601	7.745893	51
10	7.470904	7.511649	7.548897	7.583201	7.614993	7.644615	7.672345	7.698410	7.722999	7.746270	50
11	7.471615	7.512297	7.549491	7.583750	7.615503	7.645092	7.672792	7.698832	7.723398	7.746648	49
12	7.472326	7.512943	7.550085	7.584299	7.616013	7.645568	7.673239	7.699253	7.723795	7.747025	48
13	7.473035	7.513589	7.550678	7.584847	7.616523	7.646044	7.673686	7.699673	7.724193	7.747402	47
14	7.473743	7.514234	7.551270	7.585394	7.617031	7.646520	7.674132	7.700094	7.724590	7.747778	46
15	7.474449	7.514878	7.551861	7.585941	7.617540	7.646994	7.674578	7.700513	7.724987	7.748155	45
16	7.475155	7.515521	7.552452	7.586487	7.618047	7.647469	7.675023	7.700933	7.725383	7.748530	44
17	7.475859	7.516163	7.553041	7.587032	7.618554	7.647943	7.675468	7.701352	7.725779	7.748906	43
18	7.476563	7.516804	7.553630	7.587577	7.619061	7.648416	7.675912	7.701770	7.726175	7.749281	42
19	7.477265	7.517444	7.554218	7.588121	7.619567	7.648889	7.676356	7.702189	7.726570	7.749656	41
20	7.477966	7.518083	7.554806	7.588664	7.620072	7.649361	7.676799	7.702606	7.726965	7.750031	40
21	7.478666	7.518721	7.555392	7.589206	7.620577	7.649833	7.677242	7.703024	7.727360	7.750405	39
22	7.479365	7.519358	7.555978	7.589748	7.621081	7.650304	7.677685	7.703441	7.727754	7.750779	38
23	7.480062	7.519995	7.556563	7.590289	7.621584	7.650775	7.678127	7.703857	7.728148	7.751152	37
24	7.480759	7.520630	7.557147	7.590830	7.622087	7.651245	7.678568	7.704273	7.728542	7.751525	36
25	7.481454	7.521265	7.557730	7.591370	7.622590	7.651715	7.679009	7.704689	7.728935	7.751898	35
26	7.482148	7.521898	7.558313	7.591909	7.623091	7.652184	7.679450	7.705105	7.729328	7.752271	34
27	7.482842	7.522531	7.558894	7.592447	7.623593	7.652653	7.679890	7.705520	7.729720	7.752643	33
28	7.483534	7.523162	7.559475	7.592985	7.624093	7.653121	7.680330	7.705934	7.730112	7.753015	32
29	7.484223	7.523793	7.560056	7.593522	7.624593	7.653589	7.680769	7.706348	7.730504	7.753387	31
30	7.484915	7.524423	7.560635	7.594059	7.625093	7.654056	7.681208	7.706762	7.730896	7.753758	30
31	7.485603	7.525052	7.561214	7.594595	7.625592	7.654523	7.681647	7.707176	7.731287	7.754129	29
32	7.486291	7.525680	7.561792	7.595130	7.626090	7.654989	7.682085	7.707589	7.731678	7.754500	28
33	7.486978	7.526307	7.562369	7.595664	7.626588	7.655455	7.682522	7.708001	7.732068	7.754870	27
34	7.487663	7.526933	7.562945	7.596198	7.627085	7.655920	7.682960	7.708414	7.732458	7.755241	26
35	7.488348	7.527559	7.563521	7.596731	7.627582	7.656385	7.683396	7.708825	7.732848	7.755610	25
36	7.489031	7.528183	7.564096	7.597264	7.628078	7.656849	7.683832	7.709237	7.733237	7.755980	24
37	7.489711	7.528807	7.564670	7.597796	7.628573	7.657313	7.684268	7.709648	7.733626	7.756349	23
38	7.490395	7.529429	7.565243	7.598327	7.629068	7.657776	7.684704	7.710059	7.734014	7.756718	22
39	7.491075	7.530051	7.565816	7.598858	7.629562	7.658239	7.685139	7.710469	7.734403	7.757086	21
40	7.491754	7.530672	7.566387	7.599388	7.630056	7.658701	7.685573	7.710879	7.734791	7.757454	20
41	7.492432	7.531292	7.566958	7.599917	7.630549	7.659163	7.686007	7.711288	7.735178	7.757822	19
42	7.493109	7.531911	7.567529	7.600445	7.631042	7.659624	7.686441	7.711697	7.735566	7.758190	18
43	7.493787	7.532529	7.568098	7.600973	7.631534	7.660085	7.686874	7.712106	7.735952	7.758557	17
44	7.494460	7.533147	7.568667	7.601501	7.632026	7.660545	7.687307	7.712515	7.736339	7.758924	16
45	7.495134	7.533763	7.569235	7.602028	7.632517	7.661005	7.687739	7.712922	7.736725	7.759291	15
46	7.495807	7.534379	7.569803	7.602554	7.633007	7.661464	7.688171	7.713330	7.737111	7.759657	14
47	7.496478	7.534993	7.570369	7.603079	7.633497	7.661923	7.688603	7.713737	7.737497	7.760023	13
48	7.497149	7.535607	7.570935	7.603604	7.633986	7.662382	7.689034	7.714144	7.737882	7.760389	12
49	7.497819	7.536220	7.571500	7.604128	7.634475	7.662839	7.689464	7.714551	7.738267	7.760754	11
50	7.498487	7.536832	7.572065	7.604652	7.634963	7.663297	7.689894	7.714957	7.738651	7.761119	10
51	7.499155	7.537444	7.572628	7.605175	7.635451	7.663754	7.690324	7.715362	7.739035	7.761484	9
52	7.499822	7.538054	7.573191	7.605697	7.635938	7.664210	7.690754	7.715768	7.739419	7.761849	8
53	7.500487	7.538663	7.573753	7.606219	7.636425	7.664666	7.691183	7.716173	7.739803	7.762213	7
54	7.501152	7.539272	7.574315	7.606740	7.636911	7.665122	7.691611	7.716577	7.740186	7.762577	6
55	7.501815	7.539880	7.574875	7.607260	7.637396	7.665577	7.692039	7.716981	7.740568	7.762940	5
56	7.502478	7.540487	7.575436	7.607780	7.637881	7.666031	7.692467	7.717385	7.740951	7.763304	4
57	7.503139	7.541093	7.575995	7.608299	7.638366	7.666485	7.692894	7.717789	7.741333	7.763667	3
58	7.503800	7.541698	7.576553	7.608818	7.638850	7.666939	7.693321	7.718192	7.741715	7.764029	2
59	7.504459	7.542303	7.577111	7.609336	7.639333	7.667392	7.693747	7.718594	7.742096	7.764392	1
60	7.505118	7.542906	7.577668	7.609853	7.639816	7.667844	7.694173	7.718997	7.742477	7.764754	0
	89° 49'	89° 48'	89° 47'	89° 46'	89° 45'	89° 44'	89° 43'	89° 42'	89° 41'	89° 40'	"

LOG. COSINE TO SECONDS

LOG. SINE TO SECONDS. (A)

°	0° 20'	0° 21'	0° 22'	0° 23'	0° 24'	0° 25'	0° 26'	0° 27'	0° 28'	0° 29'	"
0	7.764754	7.785943	7.806146	7.825151	7.843934	7.861662	7.878693	7.895085	7.910879	7.926119	60
1	7.765115	7.786287	7.806475	7.825475	7.844235	7.861952	7.878974	7.895353	7.911138	7.926368	59
2	7.765477	7.786641	7.806830	7.825830	7.844537	7.862241	7.879252	7.895621	7.911396	7.926618	58
3	7.765838	7.786975	7.807132	7.826331	7.844838	7.862530	7.879530	7.895899	7.911654	7.926867	57
4	7.766199	7.787119	7.807460	7.826708	7.845138	7.862819	7.879807	7.896156	7.911912	7.927116	56
5	7.766559	7.787663	7.807788	7.827021	7.845439	7.863107	7.880085	7.896424	7.912170	7.927365	55
6	7.766920	7.788000	7.808115	7.827335	7.845740	7.863396	7.880362	7.896691	7.912428	7.927614	54
7	7.767280	7.788349	7.808443	7.827648	7.846040	7.863681	7.880640	7.896958	7.912685	7.927863	53
8	7.767639	7.788691	7.808770	7.827961	7.846340	7.863972	7.880917	7.897225	7.912942	7.928111	52
9	7.767999	7.789034	7.809097	7.828274	7.846640	7.864260	7.881194	7.897491	7.913200	7.928359	51
10	7.768358	7.789376	7.809423	7.828586	7.846939	7.864548	7.881470	7.897758	7.913457	7.928608	50
11	7.768716	7.789718	7.809750	7.828899	7.847239	7.864835	7.881714	7.898024	7.913714	7.928856	49
12	7.769075	7.790059	7.810076	7.829211	7.847538	7.865123	7.882023	7.898290	7.913970	7.929104	48
13	7.769433	7.790400	7.810402	7.829523	7.847837	7.865410	7.882299	7.898556	7.914227	7.929352	47
14	7.769791	7.790741	7.810728	7.829834	7.848136	7.865697	7.882575	7.898822	7.914483	7.929599	46
15	7.770149	7.791082	7.811053	7.830146	7.848431	7.865984	7.882851	7.899088	7.914740	7.929847	45
16	7.770506	7.791423	7.811378	7.830457	7.848734	7.866271	7.883127	7.899354	7.914996	7.930094	44
17	7.770863	7.791763	7.811703	7.830768	7.849031	7.866556	7.883402	7.899619	7.915252	7.930341	43
18	7.771220	7.792103	7.812028	7.831079	7.849329	7.866843	7.883678	7.899884	7.915506	7.930588	42
19	7.771576	7.792443	7.812352	7.831389	7.849626	7.867129	7.883953	7.900149	7.915763	7.930835	41
20	7.771932	7.792782	7.812677	7.831700	7.849924	7.867414	7.884228	7.900414	7.916019	7.931082	40
21	7.772288	7.793121	7.813001	7.832010	7.850221	7.867700	7.884502	7.900679	7.916274	7.931329	39
22	7.772643	7.793460	7.813324	7.832319	7.850519	7.867986	7.884777	7.900943	7.916529	7.931575	38
23	7.772999	7.793799	7.813648	7.832629	7.850816	7.868271	7.885051	7.901208	7.916785	7.931822	37
24	7.773354	7.794137	7.813971	7.832939	7.851114	7.868556	7.885326	7.901472	7.917039	7.932068	36
25	7.773708	7.794475	7.814294	7.833248	7.851409	7.868841	7.885600	7.901736	7.917294	7.932314	35
26	7.774063	7.794813	7.814617	7.833557	7.851703	7.869125	7.885874	7.902000	7.917549	7.932560	34
27	7.774417	7.795151	7.814939	7.833866	7.852001	7.869410	7.886147	7.902264	7.917803	7.932806	33
28	7.774771	7.795488	7.815262	7.834174	7.852297	7.869694	7.886421	7.902527	7.918059	7.933052	32
29	7.775124	7.795825	7.815584	7.834482	7.852593	7.869978	7.886694	7.902791	7.918312	7.933297	31
30	7.775477	7.796162	7.815905	7.834791	7.852888	7.870262	7.886968	7.903054	7.918566	7.933543	30
31	7.775830	7.796498	7.816227	7.835098	7.853184	7.870546	7.887241	7.903317	7.918820	7.933788	29
32	7.776183	7.796834	7.816548	7.835406	7.853479	7.870830	7.887514	7.903580	7.919074	7.934033	28
33	7.776535	7.797170	7.816869	7.835714	7.853774	7.871113	7.887786	7.903843	7.919327	7.934278	27
34	7.776887	7.797506	7.817190	7.836021	7.854069	7.871396	7.888059	7.904106	7.919581	7.934523	26
35	7.777239	7.797842	7.817511	7.836328	7.854363	7.871679	7.888331	7.904368	7.919834	7.934768	25
36	7.777591	7.798177	7.817831	7.836635	7.854657	7.871962	7.888603	7.904630	7.920087	7.935012	24
37	7.777942	7.798512	7.818152	7.836941	7.854952	7.872245	7.888875	7.904893	7.920340	7.935257	23
38	7.778293	7.798847	7.818471	7.837248	7.855246	7.872527	7.889147	7.905155	7.920593	7.935501	22
39	7.778644	7.799181	7.818791	7.837554	7.855539	7.872809	7.889419	7.905417	7.920846	7.935745	21
40	7.778994	7.799515	7.819111	7.837860	7.855833	7.873092	7.889690	7.905678	7.921098	7.935989	20
41	7.779344	7.799849	7.819430	7.838165	7.856126	7.873375	7.889962	7.905940	7.921351	7.936233	19
42	7.779694	7.800183	7.819749	7.838471	7.856419	7.873655	7.890233	7.906201	7.921603	7.936477	18
43	7.780043	7.800516	7.820068	7.838776	7.856712	7.873937	7.890504	7.906462	7.921855	7.936721	17
44	7.780393	7.800850	7.820386	7.839081	7.857005	7.874218	7.890775	7.906723	7.922107	7.936964	16
45	7.780742	7.801182	7.820704	7.839386	7.857298	7.874499	7.891045	7.906984	7.922359	7.937208	15
46	7.781090	7.801515	7.821022	7.839691	7.857590	7.874780	7.891316	7.907245	7.922611	7.937451	14
47	7.781439	7.801847	7.821340	7.839995	7.857882	7.875061	7.891586	7.907506	7.922862	7.937694	13
48	7.781787	7.802180	7.821658	7.840300	7.858174	7.875342	7.891856	7.907766	7.923113	7.937937	12
49	7.782135	7.802512	7.821975	7.840604	7.858466	7.875622	7.892126	7.908026	7.923366	7.938180	11
50	7.782482	7.802843	7.822292	7.840907	7.858757	7.875902	7.892396	7.908287	7.923616	7.938422	10
51	7.782829	7.803175	7.822609	7.841211	7.859049	7.876183	7.892666	7.908547	7.923867	7.938665	9
52	7.783176	7.803506	7.822926	7.841514	7.859340	7.876462	7.892935	7.908806	7.924118	7.938907	8
53	7.783523	7.803837	7.823242	7.841818	7.859631	7.876742	7.893205	7.909066	7.924368	7.939150	7
54	7.783870	7.804167	7.823556	7.842120	7.859922	7.877022	7.893474	7.909326	7.924619	7.939392	6
55	7.784216	7.804498	7.823871	7.842423	7.860212	7.877301	7.893743	7.909585	7.924869	7.939634	5
56	7.784562	7.804828	7.824190	7.842726	7.860503	7.877580	7.894012	7.909844	7.925119	7.939876	4
57	7.784907	7.805158	7.824506	7.843028	7.860793	7.877859	7.894280	7.910103	7.925370	7.940117	3
58	7.785253	7.805487	7.824821	7.843331	7.861083	7.878138	7.894549	7.910362	7.925619	7.940359	2
59	7.785598	7.805817	7.825136	7.843632	7.861373	7.878417	7.894817	7.910621	7.925869	7.940600	1
60	7.785943	7.806146	7.825451	7.843934	7.861662	7.878695	7.895085	7.910879	7.926119	7.940842	0
"	89° 39'	89° 38'	89° 37'	89° 36'	89° 35'	89° 34'	89° 33'	89° 32'	89° 31'	89° 30'	"

LOG. COSINE TO SECONDS.

LOG. SINE TO SECONDS. (K)

	0° 30'	0° 31'	0° 32'	0° 33'	0° 34'	0° 35'	0° 36'	0° 37'	0° 38'	0° 39'	"
07	940842	7 955082	7 968870	7 982233	7 995198	8 007787	8 020021	8 031919	8 043501	8 054781	60
17	941083	7 955315	7 969096	7 982453	7 995411	8 007993	8 020222	8 032115	8 043691	8 054967	59
27	941324	7 955549	7 969322	7 982672	7 995623	8 008200	8 020423	8 032310	8 043892	8 055152	58
37	941565	7 955782	7 969548	7 982891	7 995836	8 008407	8 020623	8 032506	8 044072	8 055338	57
47	941806	7 956015	7 969774	7 983110	7 996049	8 008613	8 020824	8 032701	8 044262	8 055583	56
57	942046	7 956248	7 969999	7 983329	7 996261	8 008819	8 021025	8 032895	8 044452	8 055778	55
67	942287	7 956481	7 970225	7 983547	7 996473	8 009026	8 021225	8 033092	8 044642	8 055893	54
77	942527	7 956713	7 970450	7 983766	7 996686	8 009232	8 021426	8 033287	8 044832	8 056079	53
87	942768	7 956946	7 970676	7 983984	7 996898	8 009438	8 021626	8 033482	8 045022	8 056264	52
97	943008	7 957178	7 970901	7 984203	7 997110	8 009644	8 021826	8 033676	8 045212	8 056448	51
107	943248	7 957410	7 971126	7 984421	7 997322	8 009850	8 022027	8 033871	8 045401	8 056633	50
117	943488	7 957643	7 971351	7 984639	7 997533	8 010055	8 022227	8 034066	8 045591	8 056818	49
127	943727	7 957875	7 971576	7 984857	7 997745	8 010261	8 022427	8 034261	8 045780	8 057003	48
137	943967	7 958107	7 971800	7 985075	7 997957	8 010467	8 022627	8 034455	8 045970	8 057187	47
147	944207	7 958338	7 972025	7 985293	7 998168	8 010672	8 022826	8 034649	8 046159	8 057372	46
157	944446	7 958570	7 972249	7 985511	7 998379	8 010878	8 023026	8 034844	8 046349	8 057556	45
167	944685	7 958802	7 972474	7 985729	7 998591	8 011083	8 023226	8 035038	8 046538	8 057741	44
177	944924	7 959033	7 972698	7 985946	7 998802	8 011288	8 023425	8 035232	8 046727	8 057925	43
187	945163	7 959264	7 972922	7 986164	7 999013	8 011493	8 023625	8 035426	8 046916	8 058109	42
197	945402	7 959496	7 973146	7 986381	7 999224	8 011696	8 023824	8 035620	8 047105	8 058293	41
207	945641	7 959727	7 973370	7 986598	7 999435	8 011903	8 024023	8 035814	8 047294	8 058477	40
217	945879	7 959958	7 973594	7 986815	7 999646	8 012108	8 024222	8 036008	8 047482	8 058661	39
227	946118	7 960188	7 973818	7 987032	7 999856	8 012313	8 024421	8 036202	8 047671	8 058845	38
237	946356	7 960419	7 974041	7 987249	8 000067	8 012517	8 024620	8 036396	8 047860	8 059029	37
247	946594	7 960650	7 974265	7 987465	8 000277	8 012722	8 024819	8 036589	8 048048	8 059215	36
257	946832	7 960880	7 974488	7 987682	8 000488	8 012926	8 025018	8 036783	8 048237	8 059396	35
267	947070	7 961110	7 974711	7 987899	8 000698	8 013130	8 025217	8 036976	8 048425	8 059580	34
277	947308	7 961341	7 974934	7 988115	8 000908	8 013335	8 025415	8 037169	8 048613	8 059764	33
287	947545	7 961571	7 975157	7 988332	8 001118	8 013539	8 025614	8 037363	8 048802	8 059947	32
297	947783	7 961801	7 975380	7 988548	8 001328	8 013743	8 025812	8 037556	8 048990	8 060130	31
307	948020	7 962031	7 975603	7 988765	8 001538	8 013947	8 026011	8 037749	8 049178	8 060311	30
317	948257	7 962260	7 975826	7 988980	8 001748	8 014151	8 026209	8 037942	8 049366	8 060497	29
327	948495	7 962490	7 976048	7 989196	8 001957	8 014354	8 026407	8 038135	8 049554	8 060680	28
337	948732	7 962719	7 976271	7 989412	8 002167	8 014558	8 026605	8 038327	8 049741	8 060865	27
347	948968	7 962949	7 976493	7 989627	8 002376	8 014761	8 026803	8 038520	8 049929	8 061046	26
357	949205	7 963178	7 976715	7 989843	8 002586	8 014965	8 027001	8 038713	8 050117	8 061229	25
367	949442	7 963407	7 976937	7 990058	8 002795	8 015169	8 027199	8 038905	8 050304	8 061412	24
377	949678	7 963636	7 977159	7 990274	8 003004	8 015372	8 027397	8 039098	8 050492	8 061594	23
387	949915	7 963865	7 977381	7 990489	8 003213	8 015575	8 027594	8 039290	8 050679	8 061777	22
397	950151	7 964094	7 977603	7 990704	8 003422	8 015778	8 027792	8 039482	8 050866	8 061960	21
407	950387	7 964322	7 977824	7 990919	8 003631	8 015981	8 027989	8 039675	8 051054	8 062142	20
417	950623	7 964551	7 978046	7 991134	8 003840	8 016184	8 028187	8 039867	8 051241	8 062325	19
427	950859	7 964779	7 978267	7 991349	8 004048	8 016386	8 028384	8 040059	8 051428	8 062507	18
437	951094	7 965007	7 978489	7 991564	8 004257	8 016589	8 028581	8 040251	8 051615	8 062689	17
447	951330	7 965236	7 978710	7 991778	8 004465	8 016792	8 028778	8 040443	8 051802	8 062871	16
457	951565	7 965464	7 978931	7 991993	8 004673	8 016994	8 028975	8 040634	8 051989	8 063054	15
467	951801	7 965692	7 979152	7 992207	8 004882	8 017197	8 029172	8 040826	8 052175	8 063236	14
477	952036	7 965919	7 979373	7 992422	8 005090	8 017399	8 029369	8 041018	8 052362	8 063418	13
487	952271	7 966147	7 979593	7 992636	8 005298	8 017601	8 029566	8 041209	8 052549	8 063599	12
497	952506	7 966375	7 979814	7 992850	8 005506	8 017803	8 029762	8 041401	8 052735	8 063781	11
507	952741	7 966602	7 980034	7 993064	8 005714	8 018005	8 029959	8 041592	8 052922	8 063963	10
517	952975	7 966829	7 980255	7 993278	8 005921	8 018207	8 030155	8 041783	8 053108	8 064145	9
527	953210	7 967056	7 980475	7 993491	8 006129	8 018409	8 030352	8 041974	8 053294	8 064326	8
537	953444	7 967284	7 980695	7 993705	8 006337	8 018611	8 030548	8 042165	8 053480	8 064507	7
547	953679	7 967511	7 980915	7 993919	8 006544	8 018813	8 030744	8 042356	8 053666	8 064689	6
557	953913	7 967737	7 981132	7 994132	8 006751	8 019014	8 030940	8 042547	8 053852	8 064871	5
567	954148	7 967964	7 981355	7 994346	8 006959	8 019216	8 031136	8 042738	8 054038	8 065052	4
577	954381	7 968191	7 981575	7 994559	8 007166	8 019417	8 031332	8 042929	8 054224	8 065233	3
587	954615	7 968417	7 981794	7 994772	8 007373	8 019618	8 031528	8 043120	8 054410	8 065414	2
597	954848	7 968644	7 982014	7 994985	8 007580	8 019820	8 031724	8 043311	8 054596	8 065595	1
607	955082	7 968870	7 982233	7 995198	8 007787	8 020021	8 031919	8 043501	8 054781	8 065776	0
	89° 29'	89° 28'	89° 27'	89° 26'	89° 25'	89° 24'	89° 23'	89° 22'	89° 21'	89° 20'	"

LOG. COSINE TO SECONDS.

LOG. SINE TO SECONDS. (c.)

"	0° 40'	0° 41'	0° 42'	0° 43'	0° 44'	0° 45'	0° 46'	0° 47'	0° 48'	0° 49'	"
0	0.065776	0.076500	0.086965	0.097183	0.107167	0.116926	0.126471	0.135810	0.144953	0.153907	50
1	0.065957	0.076676	0.087137	0.097351	0.107331	0.117087	0.126628	0.135964	0.145104	0.154053	51
2	0.066138	0.076853	0.087309	0.097520	0.107496	0.117248	0.126786	0.136118	0.145253	0.154203	52
3	0.066319	0.077029	0.087481	0.097688	0.107660	0.117408	0.126943	0.136272	0.145405	0.154354	53
4	0.066499	0.077205	0.087653	0.097856	0.107824	0.117569	0.127100	0.136426	0.145556	0.154495	54
5	0.066680	0.077381	0.087828	0.098024	0.107989	0.117730	0.127257	0.136580	0.145706	0.154645	55
6	0.066861	0.077558	0.087997	0.098192	0.108153	0.117890	0.127414	0.136733	0.145857	0.154793	56
7	0.067041	0.077733	0.088169	0.098360	0.108317	0.118051	0.127571	0.136887	0.146007	0.154940	57
8	0.067221	0.077910	0.088341	0.098528	0.108481	0.118211	0.127728	0.137041	0.146155	0.155085	58
9	0.067402	0.078086	0.088513	0.098695	0.108645	0.118371	0.127885	0.137194	0.146308	0.155231	59
10	0.067582	0.078261	0.088684	0.098863	0.108809	0.118532	0.128042	0.137345	0.146458	0.155376	60
11	0.067762	0.078437	0.088856	0.099031	0.108973	0.118692	0.128198	0.137501	0.146609	0.155521	61
12	0.067942	0.078613	0.089028	0.099198	0.109136	0.118852	0.128355	0.137654	0.146759	0.155667	62
13	0.068122	0.078789	0.089199	0.099366	0.109300	0.119012	0.128512	0.137808	0.146909	0.155812	63
14	0.068302	0.078964	0.089371	0.099533	0.109464	0.119172	0.128668	0.137961	0.147059	0.155957	64
15	0.068482	0.079140	0.089542	0.099701	0.109627	0.119332	0.128825	0.138114	0.147209	0.156102	65
16	0.068662	0.079315	0.089713	0.099868	0.109791	0.119492	0.128981	0.138267	0.147359	0.156247	66
17	0.068842	0.079490	0.089884	0.100035	0.109954	0.119652	0.129138	0.138420	0.147509	0.156392	67
18	0.069021	0.079666	0.090055	0.100202	0.110118	0.119812	0.129294	0.138574	0.147659	0.156537	68
19	0.069201	0.079841	0.090227	0.100370	0.110281	0.119971	0.129450	0.138726	0.147809	0.156682	69
20	0.069380	0.080016	0.090398	0.100538	0.110444	0.120131	0.129606	0.138879	0.147959	0.156827	70
21	0.069560	0.080191	0.090568	0.100704	0.110608	0.120291	0.129763	0.139032	0.148108	0.156972	71
22	0.069739	0.080366	0.090739	0.100871	0.110771	0.120450	0.129919	0.139185	0.148258	0.157117	72
23	0.069918	0.080541	0.090910	0.101037	0.110934	0.120610	0.130075	0.139333	0.148408	0.157262	73
24	0.070097	0.080716	0.091081	0.101204	0.111097	0.120769	0.130231	0.139491	0.148557	0.157407	74
25	0.070277	0.080891	0.091252	0.101371	0.111260	0.120929	0.130387	0.139643	0.148707	0.157552	75
26	0.070456	0.081066	0.091422	0.101538	0.111423	0.121088	0.130543	0.139796	0.148856	0.157697	76
27	0.070635	0.081241	0.091593	0.101704	0.111586	0.121247	0.130699	0.139948	0.149005	0.157842	77
28	0.070813	0.081415	0.091763	0.101871	0.111749	0.121407	0.130854	0.140101	0.149155	0.157987	78
29	0.070992	0.081589	0.091934	0.102037	0.111911	0.121566	0.131010	0.140253	0.149304	0.158132	79
30	0.071171	0.081764	0.092104	0.102204	0.112074	0.121725	0.131166	0.140408	0.149453	0.158277	80
31	0.071350	0.081938	0.092274	0.102370	0.112237	0.121884	0.131321	0.140558	0.149603	0.158422	81
32	0.071528	0.082112	0.092441	0.102536	0.112399	0.122043	0.131477	0.140710	0.149752	0.158567	82
33	0.071707	0.082287	0.092615	0.102703	0.112562	0.122202	0.131632	0.140863	0.149901	0.158712	83
34	0.071885	0.082461	0.092785	0.102869	0.112724	0.122361	0.131788	0.141015	0.150050	0.158857	84
35	0.072064	0.082635	0.092955	0.103035	0.112886	0.122519	0.131943	0.141167	0.150199	0.159002	85
36	0.072242	0.082809	0.093125	0.103201	0.113049	0.122678	0.132099	0.141319	0.150348	0.159147	86
37	0.072420	0.082983	0.093294	0.103367	0.113211	0.122837	0.132254	0.141471	0.150497	0.159292	87
38	0.072598	0.083157	0.093464	0.103533	0.113373	0.122996	0.132409	0.141623	0.150646	0.159437	88
39	0.072776	0.083330	0.093634	0.103699	0.113535	0.123154	0.132564	0.141775	0.150794	0.159582	89
40	0.072955	0.083504	0.093804	0.103864	0.113697	0.123313	0.132720	0.141927	0.150943	0.159727	90
41	0.073132	0.083678	0.093973	0.104030	0.113859	0.123471	0.132875	0.142079	0.151092	0.159872	91
42	0.073310	0.083851	0.094143	0.104196	0.114021	0.123629	0.133030	0.142231	0.151241	0.160017	92
43	0.073488	0.084025	0.094312	0.104361	0.114183	0.123788	0.133185	0.142382	0.151389	0.160162	93
44	0.073666	0.084198	0.094482	0.104527	0.114345	0.123946	0.133339	0.142534	0.151538	0.160307	94
45	0.073844	0.084372	0.094651	0.104692	0.114507	0.124104	0.133494	0.142685	0.151686	0.160452	95
46	0.074021	0.084545	0.094820	0.104858	0.114669	0.124263	0.133649	0.142837	0.151835	0.160597	96
47	0.074199	0.084718	0.094989	0.105023	0.114830	0.124421	0.133804	0.142989	0.151983	0.160742	97
48	0.074376	0.084892	0.095159	0.105188	0.114992	0.124579	0.133959	0.143140	0.152131	0.160887	98
49	0.074555	0.085065	0.095328	0.105354	0.115153	0.124737	0.134113	0.143291	0.152280	0.161032	99
50	0.074731	0.085238	0.095497	0.105519	0.115315	0.124895	0.134268	0.143443	0.152428	0.161177	0
51	0.074908	0.085411	0.095666	0.105684	0.115476	0.125053	0.134422	0.143594	0.152576	0.161322	1
52	0.075085	0.085584	0.095835	0.105849	0.115638	0.125210	0.134577	0.143745	0.152724	0.161467	2
53	0.075262	0.085757	0.096003	0.106014	0.115799	0.125368	0.134731	0.143896	0.152872	0.161612	3
54	0.075439	0.085929	0.096172	0.106179	0.115960	0.125526	0.134885	0.144047	0.153020	0.161757	4
55	0.075616	0.086102	0.096341	0.106344	0.116121	0.125684	0.135040	0.144199	0.153168	0.161902	5
56	0.075793	0.086275	0.096509	0.106508	0.116282	0.125841	0.135194	0.144350	0.153316	0.162047	6
57	0.075970	0.086447	0.096678	0.106673	0.116443	0.125999	0.135348	0.144501	0.153464	0.162192	7
58	0.076146	0.086620	0.096846	0.106838	0.116604	0.126156	0.135502	0.144652	0.153612	0.162337	8
59	0.076323	0.086793	0.097015	0.107002	0.116765	0.126314	0.135656	0.144802	0.153760	0.162482	9
60	0.076500	0.086965	0.097183	0.107167	0.116926	0.126471	0.135810	0.144953	0.153907	0.162627	10
"	89° 19'	89° 18'	89° 17'	89° 16'	89° 15'	89° 14'	89° 13'	89° 12'	89° 11'	89° 10'	"

LOG. COSINE TO SECONDS.

0° or 0m.		LOG. SINES, &c. (1.)						0 deg.	
min.	sec.	coscant.	cosecant.	tangent.	cotangent.	secant.	cosec.	min.	sec.
0	0	0.000000	Infinit.	0.000000	Infinit.	10.000000	10.000000	60	60
1	15	5.861666	14.138334	5.861666	14.138334	10.000000	10.000000	45	59
2	30	6.162696	13.837304	6.162696	13.837304	10.000000	10.000000	30	58
3	45	6.338787	13.661213	6.338787	13.661213	10.000000	10.000000	15	57
4	1	6.463726	13.536274	6.463726	13.536274	10.000000	10.000000	59	56
5	15	6.560636	13.439364	6.560636	13.439364	10.000000	10.000000	45	55
6	30	6.639817	13.360183	6.639817	13.360183	10.000000	10.000000	30	54
7	45	6.706764	13.293236	6.706764	13.293236	10.000000	10.000000	15	53
8	2	6.764756	13.235244	6.764756	13.235244	10.000000	10.000000	58	52
9	15	6.815909	13.184091	6.815909	13.184091	10.000000	10.000000	45	51
10	30	6.861666	13.138334	6.861666	13.138334	10.000000	10.000000	30	50
11	45	6.903059	13.096941	6.903059	13.096941	10.000000	10.000000	15	49
12	3	6.940847	13.059153	6.940847	13.059153	10.000000	10.000000	57	48
13	15	6.975609	13.024391	6.975609	13.024391	10.000000	10.000000	45	47
14	30	7.007794	12.992206	7.007794	12.992206	10.000000	10.000000	30	46
15	45	7.037757	12.962243	7.037757	12.962242	10.000000	10.000000	15	45
16	4	7.065786	12.934214	7.065786	12.934214	10.000000	10.000000	56	44
17	15	7.092115	12.907885	7.092115	12.907885	10.000000	10.000000	45	43
18	30	7.116938	12.883062	7.116938	12.883061	10.000000	10.000000	30	42
19	45	7.140420	12.859580	7.140420	12.859580	10.000000	10.000000	15	41
20	5	7.162696	12.837304	7.162696	12.837304	10.000000	10.000000	55	40
21	15	7.183985	12.816115	7.183985	12.816114	10.000000	10.000000	45	39
22	30	7.204089	12.795911	7.204089	12.795911	10.000000	10.000000	30	38
23	45	7.223394	12.776606	7.223394	12.776606	10.000001	9.999999	15	37
24	6	7.241877	12.758123	7.241878	12.758122	10.000001	9.999999	54	36
25	15	7.259606	12.740394	7.259607	12.740393	10.000001	9.999999	45	35
26	30	7.276639	12.723361	7.276640	12.723360	10.000001	9.999999	30	34
27	45	7.293030	12.706970	7.293030	12.706970	10.000001	9.999999	15	33
28	7	7.308824	12.691176	7.308825	12.691175	10.000001	9.999999	53	32
29	15	7.324064	12.675936	7.324065	12.675935	10.000001	9.999999	45	31
30	30	7.338787	12.661213	7.338788	12.661212	10.000001	9.999999	30	30
31	45	7.353027	12.646973	7.353029	12.646971	10.000001	9.999999	15	29
32	8	7.366817	12.633184	7.366817	12.633183	10.000001	9.999999	52	28
33	15	7.380180	12.619820	7.380181	12.619819	10.000001	9.999999	45	27
34	30	7.393145	12.606855	7.393146	12.606854	10.000001	9.999999	30	26
35	45	7.405734	12.594266	7.405735	12.594265	10.000002	9.999999	15	25
36	9	7.417969	12.582032	7.417970	12.582030	10.000002	9.999998	51	24
37	15	7.429867	12.570133	7.429868	12.570131	10.000002	9.999998	45	23
38	30	7.441449	12.558561	7.441451	12.558549	10.000002	9.999998	30	22
39	45	7.452730	12.547270	7.452732	12.547268	10.000002	9.999998	15	21
40	10	7.463725	12.536275	7.463727	12.536273	10.000002	9.999998	50	20
41	15	7.474449	12.525551	7.474451	12.525549	10.000002	9.999998	45	19
42	30	7.484915	12.515085	7.484917	12.515083	10.000002	9.999998	30	18
43	45	7.495134	12.504866	7.495136	12.504864	10.000002	9.999998	15	17
44	11	7.505118	12.494882	7.505120	12.494880	10.000002	9.999998	49	16
45	15	7.514878	12.485129	7.514880	12.485120	10.000002	9.999998	45	15
46	30	7.524423	12.475577	7.524426	12.475574	10.000002	9.999998	30	14
47	45	7.533763	12.466237	7.533766	12.466234	10.000003	9.999997	15	13
48	12	7.542906	12.457094	7.542909	12.457091	10.000003	9.999997	48	12
49	15	7.551861	12.448139	7.551864	12.448136	10.000003	9.999997	45	11
50	30	7.560635	12.439365	7.560638	12.439362	10.000003	9.999997	30	10
51	45	7.569235	12.430765	7.569238	12.430762	10.000003	9.999997	15	9
52	13	7.577668	12.422332	7.577671	12.422329	10.000003	9.999997	47	8
53	15	7.585941	12.414059	7.585944	12.414056	10.000003	9.999997	45	7
54	30	7.594059	12.405941	7.594062	12.405938	10.000004	9.999996	30	6
55	45	7.602028	12.397972	7.602031	12.397969	10.000004	9.999996	15	5
56	14	7.609853	12.390147	7.609857	12.390143	10.000004	9.999996	46	4
57	15	7.617543	12.382457	7.617543	12.382457	10.000004	9.999996	45	3
58	30	7.625093	12.374907	7.625097	12.374903	10.000004	9.999996	30	2
59	45	7.632517	12.367483	7.632521	12.367479	10.000004	9.999996	15	1
60	15	7.639816	12.360184	7.639820	12.360189	10.000004	9.999996	45	0
min.	sec.	cosine.	secant.	cotangent.	tangent.	secant.	sine.	min.	sec.
5° 59'		LOG. SINES, &c.						89 deg.	

0° 1'.		LOG. SINES, &c. (L.)						0 deg.	
sec.	min.	sine.	cosine.	tangent.	cotangent.	secant.	cosecant.	min.	sec.
0	15	7.639816	12.360184	7.639820	12.360180	10.000004	9.999996	45	60
1	15	7.646994	12.353006	7.646999	12.353001	10.000004	9.999996	30	59
2	30	7.654058	12.345944	7.654061	12.345939	10.000004	9.999996	15	58
3	45	7.661005	12.338995	7.661010	12.338990	10.000005	9.999995	15	57
4	16	7.667844	12.332156	7.667849	12.332151	10.000005	9.999995	44	56
5	15	7.674578	12.325422	7.674583	12.325417	10.000005	9.999995	45	55
6	30	7.681208	12.318792	7.681213	12.318787	10.000005	9.999995	30	54
7	45	7.687739	12.312261	7.687744	12.312256	10.000005	9.999995	15	53
8	17	7.694173	12.305827	7.694179	12.305821	10.000006	9.999994	43	52
9	15	7.700513	12.299487	7.700519	12.299481	10.000006	9.999994	45	51
10	30	7.706762	12.293238	7.706768	12.293232	10.000006	9.999994	30	50
11	45	7.712922	12.287078	7.712928	12.287072	10.000006	9.999994	15	49
12	18	7.718997	12.281003	7.719003	12.280997	10.000006	9.999994	42	48
13	15	7.724987	12.275013	7.724993	12.275007	10.000006	9.999994	45	47
14	30	7.730896	12.269104	7.730902	12.269098	10.000006	9.999994	30	46
15	45	7.736725	12.263275	7.736732	12.263268	10.000007	9.999993	15	45
16	19	7.742477	12.257523	7.742484	12.257516	10.000007	9.999993	41	44
17	15	7.748155	12.251845	7.748161	12.251839	10.000007	9.999993	45	43
18	30	7.753758	12.246242	7.753765	12.246235	10.000007	9.999993	30	42
19	45	7.759291	12.240709	7.759298	12.240702	10.000007	9.999993	15	41
20	20	7.764754	12.235246	7.764761	12.235239	10.000007	9.999993	40	40
21	15	7.770149	12.229851	7.770156	12.229844	10.000008	9.999992	45	39
22	30	7.775477	12.224523	7.775485	12.224515	10.000008	9.999992	30	38
23	45	7.780742	12.219258	7.780749	12.219251	10.000008	9.999992	15	37
24	21	7.785943	12.214057	7.785951	12.214049	10.000008	9.999992	39	36
25	15	7.791082	12.208918	7.791091	12.208909	10.000008	9.999992	45	35
26	30	7.796162	12.203838	7.796170	12.203830	10.000009	9.999991	30	34
27	45	7.801182	12.198818	7.801191	12.198809	10.000009	9.999991	15	33
28	22	7.806146	12.193854	7.806155	12.193845	10.000009	9.999991	37	32
29	15	7.811053	12.188947	7.811062	12.188938	10.000009	9.999991	45	31
30	30	7.815905	12.184095	7.815915	12.184085	10.000009	9.999991	30	30
31	45	7.820704	12.179206	7.820714	12.179206	10.000010	9.999990	15	29
32	23	7.825451	12.174549	7.825460	12.174540	10.000010	9.999990	37	28
33	15	7.830146	12.169854	7.830156	12.169844	10.000010	9.999990	45	27
34	30	7.834791	12.165209	7.834801	12.165199	10.000010	9.999990	30	26
35	45	7.839386	12.160614	7.839397	12.160603	10.000011	9.999989	15	25
36	24	7.843934	12.156066	7.843944	12.156056	10.000011	9.999989	36	24
37	15	7.848434	12.151566	7.848445	12.151555	10.000011	9.999989	45	23
38	30	7.852888	12.147112	7.852900	12.147100	10.000011	9.999989	30	22
39	45	7.857298	12.142702	7.857309	12.142691	10.000011	9.999989	15	21
40	25	7.861662	12.138338	7.861674	12.138326	10.000012	9.999988	35	20
41	15	7.865984	12.134016	7.865995	12.134005	10.000012	9.999988	45	19
42	30	7.870262	12.129738	7.870274	12.129726	10.000012	9.999988	30	18
43	45	7.874499	12.125501	7.874511	12.125489	10.000012	9.999988	15	17
44	26	7.878695	12.121305	7.878708	12.121292	10.000012	9.999988	34	16
45	15	7.882851	12.117149	7.882864	12.117136	10.000013	9.999987	45	15
46	30	7.886968	12.113039	7.886981	12.113019	10.000013	9.999987	30	14
47	45	7.891045	12.108955	7.891059	12.108941	10.000013	9.999987	15	13
48	27	7.895085	12.104913	7.895099	12.104901	10.000013	9.999987	33	12
49	15	7.899088	12.100912	7.899102	12.100898	10.000014	9.999986	45	11
50	30	7.903054	12.096946	7.903068	12.096932	10.000014	9.999986	30	10
51	45	7.906984	12.093016	7.906998	12.093002	10.000014	9.999986	15	9
52	28	7.910879	12.089121	7.910893	12.089108	10.000014	9.999986	31	8
53	15	7.914754	12.085260	7.914768	12.085246	10.000015	9.999985	45	7
54	30	7.918566	12.081434	7.918581	12.081419	10.000015	9.999985	30	6
55	45	7.922359	12.077641	7.922374	12.077626	10.000015	9.999985	15	5
56	29	7.926119	12.073881	7.926134	12.073866	10.000016	9.999984	31	4
57	15	7.929847	12.070153	7.929862	12.070138	10.000016	9.999984	45	3
58	30	7.933543	12.066457	7.933559	12.066441	10.000016	9.999984	30	2
59	45	7.937208	12.062792	7.937224	12.062776	10.000016	9.999984	15	1
60	30	7.940842	12.059158	7.940858	12.059142	10.000017	9.999983	30	0
sec.	min.	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	min.	sec.
5° 58'.		LOG. SINES, &c.						89 deg.	

0° 2'		LOG. SINES, &c. (t.)						0 deg.	
sec.		sine.	coscant.	tangent.	cotangent.	secant.	cosec.		sec.
0	30	7.940842	12.059158	7.940858	12.059142	10.000017	9.999983	30	■
1	15	7.944446	12.055554	7.944463	12.055537	10.000017	9.999983	45	59
2	30	7.948020	12.051980	7.948037	12.051963	10.000017	9.999983	■	58
3	45	7.951565	12.048435	7.951583	12.048417	10.000017	9.999983	15	57
4	31	7.955082	12.044918	7.955100	12.044900	10.000018	9.999982	29	56
5	15	7.958570	12.041430	7.958588	12.041412	10.000018	9.999982	45	55
6	30	7.962031	12.037969	7.962049	12.037951	10.000018	9.999982	30	54
7	45	7.965464	12.034536	7.965482	12.034518	10.000019	9.999981	15	53
8	32	7.968870	12.031130	7.968889	12.031111	10.000019	9.999981	28	52
9	15	7.972249	12.027751	7.972269	12.027731	10.000019	9.999981	45	51
10	30	7.975603	12.024397	7.975622	12.024378	10.000019	9.999981	30	50
11	45	7.978931	12.021069	7.978951	12.021049	10.000020	9.999980	15	49
12	33	7.982233	12.017767	7.982253	12.017747	10.000020	9.999980	27	48
13	15	7.985511	12.014489	7.985531	12.014469	10.000020	9.999980	45	47
14	30	7.988764	12.011236	7.988785	12.011215	10.000021	9.999979	30	46
15	45	7.991993	12.008007	7.992014	12.007986	10.000021	9.999979	15	45
16	34	7.995198	12.004802	7.995219	12.004781	10.000021	9.999979	26	44
17	15	7.998379	12.001621	7.998401	12.001599	10.000022	9.999978	45	43
18	30	8.001538	11.998462	8.001560	11.998440	10.000022	9.999978	30	42
19	45	8.004673	11.995327	8.004696	11.995304	10.000022	9.999978	15	41
20	35	8.007787	11.992213	8.007809	11.992191	10.000023	9.999977	25	40
21	15	8.010878	11.989122	8.010900	11.989099	10.000023	9.999977	45	39
22	30	8.013947	11.986053	8.013970	11.986030	10.000023	9.999977	30	38
23	45	8.016994	11.983006	8.017018	11.982982	10.000024	9.999976	15	■
24	36	8.020021	11.979979	8.020044	11.979955	10.000024	9.999976	24	36
25	15	8.023026	11.976974	8.023050	11.976950	10.000024	9.999976	45	35
26	30	8.026011	11.973989	8.026035	11.973965	10.000025	9.999975	30	34
27	45	8.028975	11.971025	8.028999	11.971000	10.000025	9.999975	15	33
28	37	8.031919	11.968081	8.031945	11.968055	10.000025	9.999975	23	32
29	15	8.034844	11.965156	8.034869	11.965131	10.000026	9.999974	45	31
30	30	8.037749	11.962251	8.037775	11.962225	10.000026	9.999974	30	30
31	45	8.040634	11.959368	8.040660	11.959339	10.000026	9.999974	15	29
32	38	8.043501	11.956499	8.043527	11.956473	10.000027	9.999973	22	28
33	15	8.046349	11.953651	8.046375	11.953624	10.000027	9.999973	45	27
34	30	8.049178	11.950822	8.049205	11.950795	10.000027	9.999973	30	26
35	45	8.051989	11.948011	8.052016	11.947984	10.000028	9.999972	15	25
36	39	8.054781	11.945219	8.054809	11.945191	10.000028	9.999972	21	24
37	15	8.057556	11.942444	8.057585	11.942415	10.000028	9.999972	45	23
38	30	8.060314	11.939686	8.060342	11.939658	10.000029	9.999971	30	22
39	45	8.063054	11.936946	8.063083	11.936917	10.000029	9.999971	15	21
40	40	8.065776	11.934224	8.065806	11.934194	10.000029	9.999971	20	20
41	15	8.068482	11.931518	8.068512	11.931488	10.000030	9.999970	45	19
42	30	8.071171	11.928829	8.071201	11.928799	10.000030	9.999970	30	■
43	45	8.073844	11.926156	8.073874	11.926126	10.000031	9.999969	15	17
44	41	8.076500	11.923500	8.076531	11.923469	10.000031	9.999969	19	16
45	15	8.079140	11.920860	8.079171	11.920829	10.000031	9.999969	45	15
46	30	8.081764	11.918236	8.081795	11.918205	10.000032	9.999968	30	14
47	45	8.084372	11.915628	8.084404	11.915596	10.000032	9.999968	15	■
48	42	8.086965	11.913035	8.086997	11.913003	10.000032	9.999968	18	12
49	15	8.089542	11.910458	8.089575	11.910425	10.000033	9.999967	45	11
50	30	8.092104	11.907896	8.092137	11.907863	10.000033	9.999967	30	10
51	45	8.094651	11.905349	8.094685	11.905315	10.000034	9.999966	15	9
52	43	8.097183	11.902817	8.097217	11.902783	10.000034	9.999966	17	8
53	15	8.099701	11.900299	8.099735	11.900265	10.000034	9.999966	45	7
54	30	8.102204	11.897796	8.102239	11.897761	10.000035	9.999965	30	6
55	45	8.104692	11.895308	8.104728	11.895272	10.000035	9.999965	15	5
56	44	8.107167	11.892833	8.107202	11.892797	10.000036	9.999964	16	4
57	15	8.109627	11.890373	8.109663	11.890337	10.000036	9.999964	45	3
58	30	8.112074	11.887926	8.112110	11.887890	10.000036	9.999964	30	2
59	45	8.114507	11.885493	8.114544	11.885456	10.000037	9.999963	15	1
60	45	8.116926	11.883074	8.116963	11.883037	10.000037	9.999963	15	0
48	7	cosid.	secant.	cotangent.	tangent.	coscant.	sine.		sec.
5° 57'		LOG. SINES, &c.						59 deg.	

LOG. SINES, &c. (t)									
0° 3'		LOG. SINES, &c. (t)						0 deg.	
sec.	min.	size.	coscant.	tangent.	cotangent.	secant.	cosecant.	sec.	min.
1	45	8.116926	11.883074	8.116963	11.883037	10.000037	9.999963	15	60
2	15	8.119332	11.880668	8.119370	11.880630	10.000038	9.999962	45	59
3	30	8.121725	11.878275	8.121763	11.878237	10.000039	9.999962	30	58
4	45	8.124104	11.875896	8.124143	11.875857	10.000040	9.999961	15	57
5	15	8.126471	11.873529	8.126510	11.873490	10.000041	9.999961	14	56
6	30	8.128826	11.871175	8.128864	11.871136	10.000042	9.999961	45	55
7	45	8.131166	11.868834	8.131206	11.868794	10.000043	9.999960	30	54
8	15	8.133494	11.866506	8.133534	11.866465	10.000044	9.999960	15	53
9	30	8.135810	11.864190	8.135851	11.864149	10.000045	9.999959	13	52
10	45	8.138114	11.861886	8.138155	11.861845	10.000046	9.999959	45	51
11	15	8.140406	11.859594	8.140447	11.859553	10.000047	9.999958	30	50
12	30	8.142727	11.857315	8.142727	11.857273	10.000048	9.999958	15	49
13	45	8.144953	11.855047	8.144996	11.855004	10.000049	9.999958	12	48
14	15	8.147209	11.852791	8.147252	11.852748	10.000050	9.999957	45	47
15	30	8.149453	11.850547	8.149497	11.850503	10.000051	9.999957	30	46
16	45	8.151686	11.848314	8.151730	11.848270	10.000052	9.999956	15	45
17	15	8.153907	11.846093	8.153952	11.846048	10.000053	9.999956	11	44
18	30	8.156117	11.843883	8.156162	11.843838	10.000054	9.999955	45	43
19	45	8.158316	11.841684	8.158361	11.841639	10.000055	9.999955	30	42
20	15	8.160504	11.839496	8.160549	11.839460	10.000056	9.999954	15	41
21	30	8.162681	11.837319	8.162727	11.837273	10.000057	9.999954	10	40
22	45	8.164847	11.835153	8.164893	11.835107	10.000058	9.999954	45	39
23	15	8.167002	11.832998	8.167049	11.832951	10.000059	9.999953	30	38
24	30	8.169146	11.830854	8.169194	11.830806	10.000060	9.999953	15	37
25	45	8.171280	11.828720	8.171328	11.828672	10.000061	9.999952	9	36
26	15	8.173404	11.826596	8.173452	11.826548	10.000062	9.999952	45	35
27	30	8.175517	11.824483	8.175566	11.824434	10.000063	9.999951	30	34
28	45	8.177620	11.822380	8.177669	11.822331	10.000064	9.999951	15	33
29	15	8.179713	11.820287	8.179763	11.820237	10.000065	9.999950	8	32
30	30	8.1818204	11.818204	8.181846	11.818154	10.000066	9.999950	45	31
31	45	8.183968	11.816132	8.183919	11.816081	10.000067	9.999949	30	30
32	15	8.185931	11.814069	8.185983	11.814017	10.000068	9.999949	15	29
33	30	8.187985	11.812015	8.188036	11.811964	10.000069	9.999948	7	28
34	45	8.190092	11.809972	8.190090	11.809919	10.000070	9.999948	45	27
35	15	8.192062	11.807938	8.192115	11.807887	10.000071	9.999947	30	26
36	30	8.194087	11.805913	8.194140	11.805862	10.000072	9.999947	15	25
37	45	8.196102	11.803899	8.196156	11.803848	10.000073	9.999946	6	24
38	15	8.198108	11.801892	8.198162	11.801839	10.000074	9.999946	45	23
39	30	8.200104	11.799896	8.200159	11.799841	10.000075	9.999945	30	22
40	45	8.202092	11.797908	8.202147	11.797853	10.000076	9.999945	15	21
41	15	8.204070	11.795930	8.204126	11.795874	10.000077	9.999944	5	20
42	30	8.206040	11.793960	8.206096	11.793904	10.000078	9.999944	45	19
43	45	8.208000	11.792000	8.208057	11.791943	10.000079	9.999943	30	18
44	15	8.209952	11.790048	8.210009	11.789991	10.000080	9.999943	15	17
45	30	8.211895	11.788103	8.211953	11.788047	10.000081	9.999942	1	16
46	45	8.213829	11.786171	8.213887	11.786113	10.000082	9.999942	45	15
47	15	8.215755	11.784245	8.215814	11.784186	10.000083	9.999941	30	14
48	30	8.217672	11.782328	8.217731	11.782269	10.000084	9.999941	15	13
49	45	8.219581	11.780419	8.219641	11.780359	10.000085	9.999940	1	12
50	15	8.221481	11.778519	8.221542	11.778458	10.000086	9.999940	45	11
51	30	8.223374	11.776626	8.223434	11.776565	10.000087	9.999939	30	10
52	45	8.225258	11.774742	8.225319	11.774681	10.000088	9.999939	15	9
53	15	8.227133	11.772867	8.227195	11.772805	10.000089	9.999938	2	8
54	30	8.229001	11.770999	8.229064	11.770937	10.000090	9.999938	45	7
55	45	8.230861	11.769139	8.230924	11.769076	10.000091	9.999937	30	6
56	15	8.232713	11.767287	8.232776	11.767224	10.000092	9.999937	15	5
57	30	8.234557	11.765443	8.234621	11.765379	10.000093	9.999936	1	4
58	45	8.236393	11.763607	8.236457	11.763542	10.000094	9.999935	1	3
59	15	8.238221	11.761779	8.238286	11.761713	10.000095	9.999935	30	2
60	30	8.240042	11.759958	8.240108	11.759892	10.000096	9.999934	15	1
61	45	8.241855	11.758145	8.241921	11.758078	10.000097	9.999934	0	0
sec.	min.	size.	coscant.	tangent.	cotangent.	secant.	cosecant.	sec.	min.
3° 56'		LOG. SINES, &c.						89 deg.	

0° 4'		LOG. SINES, &c. (t)						1 deg.	
min.	sec.	sine.	coscant.	tangent.	cotangent.	secant.	cosec.	min.	sec.
0	0	8.241855	11.758145	8.241921	11.758079	10.000066	9.999934	60	60
1	15	8.243661	11.756339	8.243728	11.756272	10.000067	9.999933	45	69
2	30	8.245459	11.754541	8.245526	11.754474	10.000067	9.999933	30	58
3	45	8.247250	11.752750	8.247318	11.752682	10.000068	9.999932	15	67
4	1	8.249033	11.750967	8.249101	11.750899	10.000068	9.999932	50	66
5	15	8.250809	11.749191	8.250878	11.749122	10.000069	9.999931	45	55
6	30	8.252578	11.747422	8.252648	11.747352	10.000070	9.999930	30	54
7	45	8.254340	11.745660	8.254410	11.745590	10.000070	9.999930	15	53
8	2	8.256094	11.743906	8.256165	11.743835	10.000071	9.999929	58	52
9	15	8.257842	11.742158	8.257913	11.742087	10.000071	9.999929	45	51
10	30	8.259582	11.740418	8.259654	11.740346	10.000072	9.999928	30	50
11	45	8.261316	11.738684	8.261388	11.738612	10.000072	9.999928	15	49
12	3	8.263042	11.736958	8.263115	11.736885	10.000073	9.999927	57	48
13	15	8.264762	11.735238	8.264836	11.735164	10.000074	9.999926	45	47
14	30	8.266476	11.733525	8.266549	11.733451	10.000074	9.999926	30	46
15	45	8.268181	11.731819	8.268256	11.731744	10.000075	9.999925	15	45
16	4	8.269881	11.730119	8.269956	11.730044	10.000075	9.999925	56	44
17	15	8.271674	11.728426	8.271650	11.728350	10.000076	9.999924	45	43
18	30	8.273360	11.726740	8.273337	11.726663	10.000076	9.999924	30	42
19	45	8.274940	11.725060	8.275017	11.724983	10.000077	9.999923	15	41
20	5	8.276614	11.723386	8.276691	11.723309	10.000078	9.999922	55	40
21	15	8.278281	11.721719	8.278359	11.721641	10.000078	9.999922	45	39
22	30	8.279941	11.720059	8.280020	11.719980	10.000079	9.999921	30	38
23	45	8.281595	11.718405	8.281675	11.718325	10.000080	9.999921	15	37
24	6	8.283243	11.716757	8.283323	11.716677	10.000080	9.999920	54	36
25	15	8.284885	11.715115	8.284966	11.715034	10.000081	9.999919	45	35
26	30	8.286521	11.713479	8.286602	11.713398	10.000081	9.999919	30	34
27	45	8.288150	11.711850	8.288232	11.711768	10.000082	9.999918	15	33
28	7	8.289773	11.710227	8.289856	11.710144	10.000083	9.999917	53	32
29	15	8.291391	11.708609	8.291474	11.708526	10.000083	9.999917	45	31
30	30	8.293002	11.706998	8.293086	11.706914	10.000084	9.999916	30	30
31	45	8.294607	11.705393	8.294692	11.705309	10.000084	9.999916	15	29
32	8	8.296207	11.703793	8.296292	11.703708	10.000085	9.999915	52	28
33	15	8.297800	11.702200	8.297886	11.702114	10.000086	9.999914	45	27
34	30	8.299388	11.700612	8.299474	11.700526	10.000086	9.999914	30	26
35	45	8.300970	11.699030	8.301057	11.698943	10.000087	9.999913	15	25
36	9	8.302546	11.697454	8.302633	11.697367	10.000088	9.999912	51	24
37	15	8.304116	11.695884	8.304205	11.695795	10.000088	9.999912	45	23
38	30	8.305681	11.694319	8.305770	11.694230	10.000089	9.999911	30	22
39	45	8.307240	11.692760	8.307330	11.692670	10.000090	9.999911	15	21
40	10	8.308794	11.691206	8.308884	11.691116	10.000090	9.999910	50	20
41	15	8.310342	11.689658	8.310433	11.689567	10.000091	9.999909	45	19
42	30	8.311885	11.688115	8.311976	11.688024	10.000091	9.999909	30	18
43	45	8.313422	11.686578	8.313514	11.686486	10.000092	9.999908	15	17
44	11	8.314954	11.685046	8.315046	11.684954	10.000093	9.999907	49	16
45	15	8.316480	11.683520	8.316573	11.683427	10.000093	9.999907	45	15
46	30	8.318001	11.681999	8.318095	11.681905	10.000094	9.999906	30	14
47	45	8.319516	11.680484	8.319611	11.680389	10.000095	9.999905	15	13
48	12	8.321027	11.678973	8.321122	11.678878	10.000095	9.999905	48	12
49	15	8.322532	11.677468	8.322628	11.677372	10.000096	9.999904	45	11
50	30	8.324032	11.675968	8.324128	11.675872	10.000097	9.999903	30	10
51	45	8.325527	11.674473	8.325624	11.674376	10.000097	9.999903	15	9
52	13	8.327016	11.672984	8.327114	11.672886	10.000098	9.999902	47	8
53	15	8.328501	11.671499	8.328599	11.671400	10.000099	9.999901	45	7
54	30	8.329980	11.670020	8.330080	11.669920	10.000099	9.999901	30	6
55	45	8.331455	11.668545	8.331555	11.668445	10.000100	9.999900	15	5
56	14	8.332924	11.667076	8.333025	11.666975	10.000101	9.999899	46	4
57	15	8.334389	11.665611	8.334490	11.665510	10.000101	9.999899	45	3
58	30	8.335848	11.664152	8.335950	11.664050	10.000102	9.999898	30	2
59	45	8.337303	11.662697	8.337406	11.662594	10.000103	9.999897	15	1
60	15	8.338753	11.661247	8.338856	11.661144	10.000103	9.999897	45	0
tan.	sec.	cosec.	cotangent.	tangent.	secant.	sine.	cos.	tan.	sec.
5° 55'		LOG. SINES, &c.						80 deg.	

0° 5'		LOG. SINES, &c. (t)						1 deg.	
sec.	"	sine.	coscant.	tangent.	cotangent.	secant.	cosecant.	"	sec.
0	15	8.338753	11.661247	8.338836	11.661144	10.000103	9.999897	45	60
1	15	8.340194	11.659802	8.340302	11.659698	10.000104	9.999896	45	59
2	30	8.341638	11.658362	8.341743	11.658257	10.000105	9.999895	30	58
3	45	8.343074	11.656926	8.343179	11.656821	10.000105	9.999895	16	67
4	18	8.344504	11.655496	8.344610	11.655390	10.000106	9.999894	44	56
5	15	8.345930	11.654070	8.346037	11.653963	10.000107	9.999893	45	55
6	30	8.347352	11.652648	8.347459	11.652541	10.000108	9.999892	30	54
7	45	8.348768	11.651232	8.348877	11.651123	10.000108	9.999892	15	53
8	17	8.350160	11.649820	8.350289	11.649711	10.000109	9.999891	43	52
9	15	8.351588	11.648412	8.351694	11.648302	10.000110	9.999890	45	51
10	30	8.352991	11.647009	8.353101	11.646899	10.000110	9.999890	30	50
11	45	8.354389	11.645611	8.354501	11.645499	10.000111	9.999889	15	49
12	18	8.355783	11.644217	8.355895	11.644103	10.000112	9.999888	42	48
13	16	8.357173	11.642827	8.357285	11.642715	10.000113	9.999887	45	47
14	30	8.358558	11.641442	8.358671	11.641329	10.000113	9.999887	30	46
15	45	8.359939	11.640061	8.360053	11.639947	10.000114	9.999886	15	45
16	19	8.361315	11.638685	8.361430	11.638570	10.000115	9.999885	41	44
17	15	8.362687	11.637313	8.362802	11.637198	10.000115	9.999885	45	43
18	30	8.364054	11.635946	8.364171	11.635829	10.000116	9.999884	30	42
19	45	8.365418	11.634582	8.365535	11.634465	10.000117	9.999883	15	41
20	20	8.366777	11.633223	8.366894	11.633106	10.000118	9.999882	40	40
21	15	8.368132	11.631868	8.368250	11.631750	10.000118	9.999882	45	39
22	30	8.369482	11.630518	8.369601	11.630399	10.000119	9.999881	30	38
23	45	8.370829	11.629171	8.370948	11.629052	10.000120	9.999880	15	37
24	21	8.372171	11.627829	8.372291	11.627709	10.000121	9.999879	39	36
25	15	8.373509	11.626491	8.373630	11.626370	10.000121	9.999879	45	35
26	30	8.374843	11.625157	8.374965	11.625035	10.000122	9.999878	30	34
27	45	8.376173	11.623827	8.376296	11.623704	10.000123	9.999877	15	33
28	22	8.377499	11.622501	8.377622	11.622378	10.000124	9.999876	38	32
29	15	8.378821	11.621179	8.378945	11.621055	10.000124	9.999876	45	31
30	30	8.380138	11.619862	8.380263	11.619737	10.000125	9.999875	30	30
31	45	8.381452	11.618548	8.381578	11.618422	10.000126	9.999874	15	29
32	23	8.382762	11.617238	8.382889	11.617111	10.000127	9.999873	37	28
33	15	8.384068	11.615932	8.384195	11.615805	10.000127	9.999873	45	27
34	30	8.385370	11.614630	8.385498	11.614502	10.000128	9.999872	30	26
35	45	8.386668	11.613332	8.386797	11.613203	10.000129	9.999871	15	25
36	24	8.387962	11.612038	8.388092	11.611908	10.000130	9.999870	36	24
37	15	8.389253	11.610747	8.389383	11.610617	10.000130	9.999870	45	23
38	30	8.390539	11.609461	8.390670	11.609330	10.000131	9.999869	30	22
39	45	8.391822	11.608178	8.391954	11.608046	10.000132	9.999868	15	21
40	25	8.393101	11.606899	8.393234	11.606766	10.000133	9.999867	35	20
41	15	8.394376	11.605624	8.394509	11.605491	10.000134	9.999866	45	19
42	30	8.395647	11.604353	8.395782	11.604218	10.000134	9.999866	30	18
43	45	8.396915	11.603085	8.397050	11.602950	10.000135	9.999865	15	17
44	26	8.398179	11.601821	8.398315	11.601685	10.000136	9.999864	34	16
45	15	8.399440	11.600560	8.399576	11.600424	10.000137	9.999863	45	15
46	30	8.400696	11.599304	8.400834	11.599166	10.000138	9.999862	30	14
47	45	8.401949	11.598051	8.402088	11.597912	10.000138	9.999862	15	13
48	27	8.403199	11.596801	8.403338	11.596662	10.000139	9.999861	33	12
49	15	8.404445	11.595555	8.404585	11.595415	10.000140	9.999860	45	11
50	30	8.405687	11.594313	8.405828	11.594172	10.000141	9.999859	30	10
51	45	8.406926	11.593074	8.407068	11.592932	10.000142	9.999858	15	9
52	28	8.408161	11.591839	8.408304	11.591696	10.000142	9.999858	32	8
53	15	8.409393	11.590607	8.409536	11.590464	10.000143	9.999857	45	7
54	30	8.410621	11.589379	8.410765	11.589235	10.000144	9.999856	30	6
55	45	8.411846	11.588154	8.411991	11.589009	10.000145	9.999855	15	5
56	29	8.413068	11.586932	8.413213	11.588787	10.000146	9.999854	31	4
57	15	8.414286	11.585714	8.414432	11.588568	10.000146	9.999854	45	3
58	30	8.415500	11.584500	8.415647	11.588353	10.000147	9.999853	30	2
59	45	8.416711	11.583289	8.416859	11.588141	10.000148	9.999852	15	1
60	30	8.417919	11.582081	8.418068	11.587932	10.000149	9.999851	30	0
sec.	"	sine.	coscant.	tangent.	cotangent.	secant.	cosecant.	"	sec.

5° 54'

LOG. SINES, &c.

58 deg.

0° 0'.		LOG. SINES, &c. (L)						1 deg.	
sec.	"	sine	coscant.	tangent	coscant.	secant	cosine	"	sec
0	30	8.417919	11.582081	8.418068	11.581932	10.000149	9.999851	30	60
1	15	8.419123	11.580877	8.419273	11.580727	10.000150	9.999850	45	59
2	00	8.420324	11.579676	8.420475	11.579525	10.000151	9.999849	30	58
3	45	8.421522	11.578478	8.421674	11.578326	10.000151	9.999849	15	57
4	31	8.422717	11.577283	8.422869	11.577131	10.000152	9.999848	20	56
5	15	8.423908	11.576092	8.424061	11.575939	10.000153	9.999847	45	55
6	30	8.425096	11.574904	8.425250	11.574750	10.000154	9.999846	00	54
7	45	8.426281	11.573719	8.426435	11.573565	10.000155	9.999845	15	53
8		8.427462	11.572520	8.427618	11.572372	10.000156	9.999844	28	52
9	15	8.428640	11.571360	8.428797	11.571203	10.000156	9.999844	45	51
10	30	8.429815	11.570185	8.429973	11.570027	10.000157	9.999843	30	50
11	45	8.430987	11.569013	8.431145	11.568855	10.000158	9.999842	15	49
12	33	8.432156	11.567844	8.432315	11.567685	10.000159	9.999841	27	48
13	15	8.433322	11.566678	8.433481	11.566519	10.000160	9.999840	45	47
14	30	8.434484	11.565516	8.434645	11.565355	10.000161	9.999839	30	46
15	45	8.435644	11.564356	8.435805	11.564195	10.000162	9.999838	15	45
16	31	8.436800	11.563200	8.436962	11.563038	10.000162	9.999838	26	44
17	15	8.437953	11.562047	8.438116	11.561884	10.000163	9.999837	45	43
18	00	8.439103	11.560897	8.439267	11.560733	10.000164	9.999836	30	42
19	45	8.440250	11.559750	8.440415	11.559585	10.000165	9.999835	15	41
20	35	8.441394	11.558606	8.441560	11.558440	10.000166	9.999834	25	40
21	15	8.442535	11.557465	8.442702	11.557298	10.000167	9.999833	45	39
22	00	8.443674	11.556320	8.443841	11.556159	10.000168	9.999832	30	38
23	45	8.444809	11.555191	8.444977	11.555023	10.000169	9.999831	15	37
24	36	8.445941	11.554059	8.446110	11.553890	10.000169	9.999831	24	36
25	15	8.447070	11.552930	8.447240	11.552760	10.000170	9.999830	45	35
26	30	8.448196	11.551804	8.448367	11.551633	10.000171	9.999829	30	34
27	45	8.449320	11.550680	8.449492	11.550508	10.000172	9.999828	15	33
28	37	8.450440	11.549560	8.450613	11.549387	10.000173	9.999827	23	32
29	15	8.451558	11.548442	8.451732	11.548268	10.000174	9.999826	45	31
30	30	8.452672	11.547328	8.452847	11.547153	10.000175	9.999825	30	30
31	45	8.453784	11.546216	8.453960	11.546040	10.000176	9.999824	15	29
32	38	8.454893	11.545107	8.455070	11.544930	10.000177	9.999823	22	28
33	15	8.456000	11.544000	8.456177	11.543823	10.000177	9.999823	45	27
34	30	8.457103	11.542897	8.457281	11.542719	10.000178	9.999822	30	26
35	45	8.458203	11.541797	8.458383	11.541617	10.000179	9.999821	15	25
36	39	8.459301	11.540699	8.459481	11.540519	10.000180	9.999820	21	24
37	15	8.460396	11.539604	8.460577	11.539423	10.000181	9.999819	45	23
38	30	8.461489	11.538511	8.461670	11.538330	10.000182	9.999818	30	22
39	45	8.462578	11.537422	8.462761	11.537239	10.000183	9.999817	15	21
40	40	8.463665	11.536335	8.463849	11.536151	10.000184	9.999816	20	20
41	15	8.464749	11.535251	8.464934	11.535066	10.000185	9.999815	45	19
42	30	8.465830	11.534170	8.466016	11.533984	10.000186	9.999814	30	18
43	45	8.466909	11.533091	8.467095	11.532905	10.000187	9.999813	15	17
44	41	8.467985	11.532015	8.468172	11.531828	10.000188	9.999812	19	16
45	15	8.469058	11.530942	8.469247	11.530753	10.000188	9.999812	45	15
46	30	8.470129	11.529871	8.470318	11.529682	10.000189	9.999811	30	14
47	45	8.471197	11.528803	8.471387	11.528613	10.000190	9.999810	15	13
48	42	8.472263	11.527737	8.472454	11.527546	10.000191	9.999809	18	12
49	15	8.473325	11.526675	8.473517	11.526483	10.000192	9.999808	45	11
50	30	8.474386	11.525614	8.474579	11.525421	10.000193	9.999807	30	10
51	45	8.475443	11.524557	8.475637	11.524363	10.000194	9.999806	15	9
52	43	8.476498	11.523502	8.476693	11.523307	10.000195	9.999805	17	8
53	15	8.477551	11.522449	8.477747	11.522253	10.000196	9.999804	45	7
54	30	8.478601	11.521399	8.478798	11.521202	10.000197	9.999803	30	6
55	45	8.479648	11.520352	8.479846	11.520154	10.000198	9.999802	15	5
56	44	8.480693	11.519307	8.480892	11.519108	10.000199	9.999801	16	4
57	15	8.481736	11.518264	8.481935	11.518065	10.000200	9.999800	45	3
58	30	8.482775	11.517225	8.482976	11.517024	10.000201	9.999799	30	2
59	45	8.483813	11.516187	8.484015	11.515985	10.000202	9.999798	15	1
60	45	8.484848	11.515152	8.485050	11.514950	10.000203	9.999797	15	0
sec.	"	sine.	coscant.	tangent.	coscant.	secant.	sine.	"	sec
5° 53'.		LOG. SINES, &c.						58 deg.	

0° 7'.		LOG. SINES, &c. (1)						1 deg.	
sec.	°	sine.	coscant.	tangent.	cotangent.	secant.	cosec.	°	sec.
0	45	8.484418	11.515152	8.485050	11.514950	10.000203	9.999797	15	56
1	15	8.485880	11.514120	8.486084	11.513916	10.000204	9.999796	45	52
2	30	8.486910	11.513090	8.487115	11.512885	10.000205	9.999795	30	53
3	45	8.487938	11.512062	8.488143	11.511857	10.000206	9.999794	15	57
4	46	8.488963	11.511037	8.489170	11.510830	10.000207	9.999793	14	56
5	15	8.489986	11.510014	8.490193	11.509807	10.000208	9.999792	45	55
6	30	8.491005	11.508994	8.491213	11.508785	10.000208	9.999792	30	54
7	45	8.492024	11.507976	8.492234	11.507766	10.000209	9.999791	15	53
8	47	8.493040	11.506960	8.493250	11.506750	10.000210	9.999790	13	52
9	15	8.494053	11.505947	8.494264	11.505736	10.000211	9.999789	45	51
10	30	8.495064	11.504936	8.495276	11.504724	10.000212	9.999788	30	50
11	45	8.496072	11.503928	8.496286	11.503714	10.000213	9.999787	15	49
12	48	8.497078	11.502922	8.497293	11.502707	10.000214	9.999786	12	48
13	15	8.498082	11.501918	8.498298	11.501702	10.000215	9.999785	45	47
14	30	8.499084	11.500916	8.499300	11.500700	10.000216	9.999784	30	46
15	45	8.500093	11.499917	8.500309	11.499706	10.000217	9.999783	15	45
16	49	8.501096	11.498920	8.501298	11.498702	10.000218	9.999782	11	44
17	15	8.502074	11.497926	8.502294	11.497706	10.000219	9.999781	45	43
18	30	8.503067	11.496933	8.503287	11.496713	10.000220	9.999780	30	42
19	45	8.504057	11.495943	8.504278	11.495722	10.000221	9.999779	15	41
20	50	8.505045	11.494955	8.505267	11.494733	10.000222	9.999778	10	40
21	15	8.506030	11.493970	8.506254	11.493746	10.000223	9.999777	45	39
22	30	8.507014	11.492986	8.507238	11.492762	10.000224	9.999776	30	38
23	45	8.508005	11.492005	8.508229	11.491780	10.000225	9.999775	15	37
24	51	8.508974	11.491026	8.509200	11.490800	10.000226	9.999774	9	36
25	15	8.509950	11.490050	8.510178	11.489822	10.000227	9.999773	45	35
26	30	8.510925	11.489075	8.511153	11.488847	10.000228	9.999772	30	34
27	45	8.511897	11.488103	8.512127	11.487873	10.000229	9.999770	15	33
28	52	8.512867	11.487133	8.513098	11.486902	10.000231	9.999769	8	32
29	15	8.513835	11.486165	8.514067	11.485933	10.000232	9.999768	45	31
30	30	8.514801	11.485199	8.515034	11.484966	10.000233	9.999767	30	30
31	45	8.515765	11.484235	8.515998	11.484002	10.000234	9.999766	15	29
32	53	8.516726	11.483274	8.516961	11.483039	10.000235	9.999765	7	28
33	15	8.517686	11.482314	8.517921	11.482079	10.000236	9.999764	45	27
34	30	8.518643	11.481357	8.518880	11.481120	10.000237	9.999763	30	26
35	45	8.519598	11.480402	8.519836	11.480164	10.000238	9.999762	15	25
36	54	8.520551	11.479449	8.520790	11.479210	10.000239	9.999761	6	24
37	15	8.521503	11.478498	8.521742	11.478258	10.000240	9.999760	45	23
38	30	8.522454	11.477549	8.522692	11.477308	10.000241	9.999759	30	22
39	45	8.523403	11.476602	8.523640	11.476350	10.000242	9.999758	15	21
40	55	8.524353	11.475657	8.524586	11.475414	10.000243	9.999757	5	20
41	15	8.525296	11.474714	8.525530	11.474470	10.000244	9.999756	45	19
42	30	8.526226	11.473774	8.526472	11.473528	10.000245	9.999755	30	18
43	45	8.527165	11.472835	8.527411	11.472589	10.000246	9.999754	15	17
44	56	8.528102	11.471898	8.528349	11.471651	10.000247	9.999753	4	16
45	15	8.529036	11.470964	8.529285	11.470715	10.000248	9.999752	45	15
46	30	8.529969	11.470031	8.530218	11.469782	10.000249	9.999751	30	14
47	45	8.530899	11.469101	8.531150	11.468850	10.000251	9.999749	15	13
48	57	8.531828	11.468172	8.532080	11.467920	10.000252	9.999748	8	12
49	15	8.532755	11.467245	8.533007	11.466993	10.000253	9.999747	45	11
50	30	8.533679	11.466321	8.533933	11.466067	10.000254	9.999746	30	10
51	45	8.534602	11.465398	8.534857	11.465143	10.000255	9.999745	15	9
52	58	8.535523	11.464477	8.535779	11.464221	10.000256	9.999744	2	8
53	15	8.536442	11.463558	8.536699	11.463301	10.000257	9.999743	45	7
54	30	8.537358	11.462642	8.537616	11.462384	10.000258	9.999742	30	6
55	45	8.538273	11.461727	8.538532	11.461468	10.000259	9.999741	15	5
56	59	8.539186	11.460814	8.539447	11.460553	10.000260	9.999740	1	4
57	15	8.540097	11.459903	8.540359	11.459641	10.000261	9.999739	45	3
58	30	8.541007	11.458993	8.541269	11.458731	10.000262	9.999738	30	2
59	45	8.541914	11.458086	8.542177	11.457823	10.000264	9.999736	15	1
60	60	8.542819	11.457181	8.543084	11.456916	10.000265	9.999735	0	0
sec.	°	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	°	sec.

0° 9'.		LOG. SINES, &c. (t.)						2 deg.		
deg.	"	sine.	coscant.	tangent.	cotangent.	secant.	co-sec.	"	"	sec.
0	0	8.542819	11.457181	8.543084	11.456916	10.000265	9.999735	60		60
1	15	8.543723	11.456277	8.543988	11.456012	10.000266	9.999734	45		59
2	30	8.544624	11.455376	8.544891	11.455109	10.000267	9.999733	30		58
3	45	8.545524	11.454476	8.545792	11.454208	10.000268	9.999732	15		57
4	1	8.546422	11.453578	8.546691	11.453309	10.000269	9.999731	59		56
5	15	8.547318	11.452682	8.547588	11.452412	10.000270	9.999730	45		55
6	30	8.548212	11.451788	8.548483	11.451517	10.000271	9.999729	30		54
7	45	8.549104	11.450890	8.549377	11.450623	10.000272	9.999728	15		53
8	2	8.549995	11.450005	8.550268	11.449732	10.000274	9.999726	58		52
9	15	8.550883	11.449117	8.551158	11.448842	10.000275	9.999725	45		51
10	30	8.551770	11.448230	8.552046	11.447954	10.000276	9.999724	30		50
11	45	8.552655	11.447345	8.552932	11.447068	10.000277	9.999723	15		49
12	3	8.553539	11.446461	8.553817	11.446183	10.000278	9.999722	57		48
13	15	8.554420	11.445580	8.554699	11.445301	10.000279	9.999721	45		47
14	30	8.555300	11.444700	8.555580	11.444420	10.000280	9.999720	30		46
15	45	8.556177	11.443823	8.556459	11.443541	10.000281	9.999719	15		45
16	4	8.557054	11.442946	8.557336	11.442664	10.000283	9.999717	56		44
17	15	8.557929	11.442072	8.558212	11.441788	10.000284	9.999716	45		43
18	30	8.558800	11.441200	8.559085	11.440915	10.000285	9.999715	30		42
19	45	8.559671	11.440329	8.559957	11.440043	10.000286	9.999714	15		41
20	5	8.560540	11.439460	8.560828	11.439172	10.000287	9.999713	55		40
21	15	8.561408	11.438592	8.561696	11.438304	10.000288	9.999712	45		39
22	30	8.562273	11.437727	8.562563	11.437437	10.000290	9.999710	30		38
23		8.563137	11.436863	8.563428	11.436572	10.000291	9.999709	15		37
24	6	8.563999	11.436001	8.564291	11.435709	10.000292	9.999708	54		36
25	15	8.564860	11.435140	8.565153	11.434847	10.000293	9.999707	45		35
26	30	8.565719	11.434281	8.566013	11.433987	10.000294	9.999706	30		34
27	45	8.566578	11.433424	8.566871	11.433129	10.000295	9.999705	15		33
28	7	8.567431	11.432569	8.567727	11.432273	10.000296	9.999704	53		32
29	15	8.568285	11.431715	8.568582	11.431418	10.000298	9.999702	45		31
30	30	8.569137	11.430863	8.569435	11.430565	10.000299	9.999701	30		30
31		8.569987	11.430013	8.570287	11.429713	10.000300	9.999700	15		29
32	8	8.570836	11.429164	8.571137	11.428863	10.000301	9.999699	52		28
33	15	8.571683	11.428317	8.571985	11.428015	10.000302	9.999698	45		27
34	30	8.572528	11.427472	8.572832	11.427168	10.000304	9.999696	30		26
35	45	8.573372	11.426628	8.573676	11.426324	10.000305	9.999695	15		25
36	9	8.574214	11.425786	8.574520	11.425480	10.000306	9.999694	51		24
37	15	8.575054	11.424946	8.575361	11.424639	10.000307	9.999693	45		23
38	30	8.575893	11.424107	8.576201	11.423799	10.000308	9.999692	30		22
39	45	8.576730	11.423270	8.577040	11.422960	10.000309	9.999691	15		21
40	10	8.577566	11.422434	8.577877	11.422123	10.000311	9.999689	50		20
41	15	8.578400	11.421600	8.578712	11.421288	10.000312	9.999688	45		19
42	30	8.579232	11.420768	8.579545	11.420455	10.000313	9.999687	30		18
43	45	8.580063	11.419937	8.580377	11.419623	10.000314	9.999686	15		17
44	11	8.580892	11.419108	8.581208	11.418792	10.000315	9.999685	49		16
45	15	8.581720	11.418280	8.582036	11.417964	10.000317	9.999683	45		15
46		8.582546	11.417454	8.582864	11.417136	10.000318	9.999682	30		14
47	45	8.583370	11.416630	8.583689	11.416311	10.000319	9.999681	15		13
48	12	8.584193	11.415807	8.584514	11.415486	10.000320	9.999680	48		12
49	15	8.585015	11.414985	8.585336	11.414664	10.000321	9.999679	45		11
50	30	8.585834	11.414166	8.586157	11.413843	10.000323	9.999677	30		10
51	45	8.586653	11.413347	8.586977	11.413023	10.000324	9.999676	15		9
52	13	8.587469	11.412531	8.587794	11.412206	10.000325	9.999675	47		8
53	15	8.588285	11.411715	8.588611	11.411389	10.000326	9.999674	45		7
54	30	8.589098	11.410902	8.589426	11.410574	10.000328	9.999672	30		6
55	45	8.589910	11.410090	8.590239	11.409761	10.000329	9.999671	15		5
56	14	8.590721	11.409279	8.591051	11.408949	10.000330	9.999670	46		4
57	15	8.591530	11.408470	8.591861	11.408139	10.000331	9.999669	45		3
58	30	8.592338	11.407662	8.592670	11.407330	10.000333	9.999667	30		2
59	45	8.593144	11.406856	8.593477	11.406523	10.000334	9.999666	15		1
60	15	8.593948	11.406052	8.594283	11.405717	10.000335	9.999665	45		
deg.	"	sine.	coscant.	tangent.	cotangent.	secant.	co-sec.	"	"	sec.
51° 51'.		LOG. SINES, &c.						87 deg.		

0° 9'.		LOG. SINES, &c. (L.)						2 deg.	
deg.	min.	sine.	coscant.	tangent.	cotangent.	secant.	cosec.		
0	15	8.593948	11.406052	8.594283	11.405717	10.000335	9.999665		45
1	15	8.594751	11.405249	8.595087	11.404913	10.000336	9.999664	45	
2	30	8.595553	11.404447	8.595890	11.404110	10.000337	9.999663	30	
3	45	8.596353	11.403647	8.596692	11.403308	10.000339	9.999661	15	
4	16	8.597152	11.402848	8.597492	11.402508	10.000340	9.999660		44
5	15	8.597949	11.402051	8.598290	11.401710	10.000341	9.999659	45	
6	30	8.598745	11.401255	8.599087	11.401913	10.000342	9.999658	30	
7	45	8.599539	11.400461	8.599883	11.400117	10.000344	9.999656	15	
8	17	8.600332	11.399668	8.600677	11.399323	10.000345	9.999655		43
9	15	8.601123	11.398877	8.601469	11.398531	10.000346	9.999654	45	
10	30	8.601913	11.398087	8.602260	11.397740	10.000348	9.999652	30	
11	45	8.602701	11.397299	8.603050	11.396950	10.000349	9.999651	15	
12	18	8.603489	11.396511	8.603839	11.396161	10.000350	9.999650		42
13	15	8.604274	11.395726	8.604625	11.395374	10.000351	9.999649	45	
14	30	8.605058	11.394942	8.605411	11.394589	10.000353	9.999647	30	
15	45	8.605841	11.394159	8.606195	11.393805	10.000354	9.999646	15	
16	19	8.606623	11.393377	8.606978	11.393022	10.000355	9.999645		41
17	15	8.607403	11.392597	8.607759	11.392241	10.000356	9.999644	45	
18	30	8.608181	11.391819	8.608539	11.391461	10.000358	9.999642	30	
19	45	8.608958	11.391042	8.609317	11.390683	10.000359	9.999641	15	
20	20	8.609734	11.390266	8.610094	11.389906	10.000360	9.999640		40
21	15	8.610508	11.389492	8.610870	11.389130	10.000362	9.999638	45	
22	30	8.611281	11.388719	8.611644	11.388356	10.000363	9.999637	30	
23	45	8.612053	11.387947	8.612417	11.387583	10.000364	9.999636	15	
24	21	8.612823	11.387177	8.613189	11.386811	10.000365	9.999635		39
25	15	8.613592	11.386408	8.613959	11.386041	10.000367	9.999633	45	
26	30	8.614360	11.385640	8.614728	11.385272	10.000368	9.999632	30	
27	45	8.615126	11.384874	8.615495	11.384505	10.000369	9.999631	15	
28	22	8.615891	11.384109	8.616262	11.383738	10.000371	9.999629		38
29	15	8.616654	11.383346	8.617026	11.382974	10.000372	9.999628	45	
30	30	8.617417	11.382583	8.617790	11.382210	10.000373	9.999627	30	
31	45	8.618177	11.381823	8.618552	11.381448	10.000375	9.999625	15	
32	23	8.618937	11.381063	8.619313	11.380687	10.000376	9.999624		37
33	15	8.619695	11.380305	8.620072	11.379928	10.000377	9.999623	45	
34	30	8.620452	11.379548	8.620830	11.379170	10.000379	9.999621	30	
35	45	8.621207	11.378793	8.621587	11.378413	10.000380	9.999620	15	
36	24	8.621962	11.378038	8.622343	11.377657	10.000381	9.999619		36
37	15	8.622714	11.377285	8.623097	11.376903	10.000382	9.999618	45	
38	30	8.623466	11.376534	8.623850	11.376150	10.000384	9.999616	30	
39	45	8.624216	11.375784	8.624601	11.375399	10.000385	9.999615	15	
40	25	8.624965	11.375035	8.625352	11.374648	10.000386	9.999614		35
41	15	8.625713	11.374287	8.626101	11.373899	10.000388	9.999612	45	
42	30	8.626459	11.373541	8.626848	11.373152	10.000389	9.999611	30	
43	45	8.627205	11.372795	8.627595	11.372405	10.000390	9.999610	15	
44	26	8.627948	11.372053	8.628340	11.371660	10.000392	9.999608		34
45	15	8.628691	11.371309	8.629084	11.371916	10.000393	9.999607	45	
46	30	8.629432	11.370568	8.629827	11.371173	10.000395	9.999605	30	
47	45	8.630172	11.369828	8.630568	11.369432	10.000396	9.999604	15	
48	27	8.630911	11.369089	8.631308	11.368692	10.000397	9.999603		33
49	15	8.631649	11.368351	8.632047	11.367953	10.000399	9.999601	45	
50	30	8.632385	11.367615	8.632785	11.367215	10.000400	9.999600	30	
51	45	8.633120	11.366880	8.633521	11.366479	10.000401	9.999599	15	
52	28	8.633854	11.366146	8.634256	11.365741	10.000403	9.999597		32
53	15	8.634586	11.365414	8.634990	11.365010	10.000404	9.999596	45	
54	30	8.635317	11.364683	8.635723	11.364277	10.000405	9.999595	30	
55	45	8.636048	11.363952	8.636454	11.363546	10.000407	9.999593	15	
56	29	8.636776	11.363224	8.637184	11.362816	10.000408	9.999592		31
57	15	8.637504	11.362496	8.637913	11.362087	10.000409	9.999591	45	
58	30	8.638230	11.361770	8.638641	11.361359	10.000411	9.999589	30	
59	45	8.638956	11.361044	8.639368	11.360632	10.000412	9.999588	15	
60	30	8.639680	11.360320	8.640093	11.359907	10.000414	9.999586		30
sec.		cosec.	secant.	cotangent.	tangent.	cosecant.	sine.		
56 50'.		LOG. SINES, &c.						57 deg.	

0° 10'		LOG. SINES, &c. (L)						2 deg.	
sec.	min.	sine	cosine	tangent	cotangent	secant	cosecant	sec.	min.
0	30	8.639880	11.360320	8.640093	11.359907	10.000414	9.999586	30	60
1	15	8.640402	11.359598	8.640817	11.359183	10.000415	9.999585	45	59
2	30	8.641124	11.358876	8.641540	11.358460	10.000416	9.999584	30	58
3	45	8.641844	11.358156	8.642262	11.357738	10.000418	9.999582	15	57
4	31	8.642563	11.357437	8.642982	11.357018	10.000419	9.999581	29	56
5	15	8.643281	11.356719	8.643702	11.356298	10.000421	9.999579	45	55
6	30	8.643998	11.356002	8.644420	11.355580	10.000422	9.999578	30	54
7	45	8.644714	11.355286	8.645137	11.354863	10.000423	9.999577	15	53
8	32	8.645428	11.354572	8.645853	11.354147	10.000425	9.999575	28	52
9	15	8.646141	11.353859	8.646567	11.353433	10.000426	9.999574	45	51
10	30	8.646853	11.353147	8.647281	11.352719	10.000428	9.999572	30	50
11	45	8.647564	11.352436	8.647993	11.352007	10.000429	9.999571	15	49
12	33	8.648274	11.351726	8.648704	11.351296	10.000430	9.999570	27	48
13	15	8.648983	11.351017	8.649414	11.350586	10.000432	9.999568	45	47
14	30	8.649690	11.350310	8.650123	11.349877	10.000433	9.999567	30	46
15	45	8.650396	11.349604	8.650831	11.349169	10.000435	9.999565	15	45
16	34	8.651102	11.348898	8.651537	11.348463	10.000436	9.999564	26	44
17	15	8.651806	11.348194	8.652243	11.347757	10.000437	9.999563	45	43
18	30	8.652508	11.347492	8.652947	11.347053	10.000439	9.999561	30	42
19	45	8.653210	11.346790	8.653650	11.346350	10.000440	9.999560	15	41
20	35	8.653911	11.346089	8.654352	11.345648	10.000442	9.999558	25	40
21	15	8.654610	11.345390	8.655053	11.344947	10.000443	9.999557	45	39
22	30	8.655308	11.344692	8.655753	11.344247	10.000444	9.999556	30	38
23	45	8.656006	11.343994	8.656451	11.343549	10.000446	9.999554	15	37
24	36	8.656702	11.343298	8.657149	11.342851	10.000447	9.999553	24	36
25	15	8.657397	11.342603	8.657845	11.342155	10.000449	9.999551	45	35
26	30	8.658090	11.341910	8.658541	11.341459	10.000450	9.999550	30	34
27	45	8.658783	11.341217	8.659235	11.340765	10.000452	9.999548	15	33
28	37	8.659475	11.340525	8.659928	11.340072	10.000453	9.999547	23	32
29	10	8.660165	11.339835	8.660620	11.339380	10.000455	9.999545	45	31
30	30	8.660855	11.339145	8.661311	11.338689	10.000456	9.999544	30	30
31	45	8.661543	11.338457	8.662000	11.338000	10.000457	9.999543	15	29
32	38	8.662230	11.337770	8.662689	11.337311	10.000459	9.999541	22	28
33	15	8.662916	11.337084	8.663377	11.336623	10.000460	9.999540	45	27
34	30	8.663601	11.336399	8.664063	11.335937	10.000462	9.999538	30	26
35	45	8.664285	11.335715	8.664749	11.335251	10.000463	9.999537	15	25
36	39	8.664968	11.335032	8.665433	11.334567	10.000465	9.999535	21	24
37	15	8.665650	11.334350	8.666116	11.333884	10.000466	9.999534	45	23
38	30	8.666331	11.333669	8.666799	11.333201	10.000468	9.999532	30	22
39	45	8.667011	11.332989	8.667480	11.332520	10.000469	9.999531	15	21
40	40	8.667689	11.332311	8.668160	11.331840	10.000470	9.999530	20	20
41	15	8.668367	11.331633	8.668839	11.331161	10.000472	9.999528	45	19
42	30	8.669043	11.330957	8.669517	11.330483	10.000474	9.999526	30	18
43	45	8.669719	11.330281	8.670194	11.329806	10.000475	9.999525	15	17
44	41	8.670393	11.329607	8.670870	11.329130	10.000476	9.999524	19	16
45	15	8.671067	11.328933	8.671544	11.328456	10.000478	9.999522	45	15
46	30	8.671739	11.328261	8.672218	11.327782	10.000479	9.999521	30	14
47	45	8.672410	11.327590	8.672891	11.327109	10.000481	9.999519	15	13
48	42	8.673080	11.326920	8.673563	11.326437	10.000482	9.999518	18	12
49	15	8.673750	11.326250	8.674233	11.325767	10.000484	9.999516	45	11
50	30	8.674418	11.325582	8.674903	11.325097	10.000485	9.999515	30	10
51	45	8.675085	11.324915	8.675572	11.324428	10.000487	9.999513	15	9
52	43	8.675751	11.324249	8.676239	11.323761	10.000488	9.999512	17	8
53	15	8.676416	11.323581	8.676906	11.323094	10.000490	9.999510	45	7
54	30	8.677080	11.322920	8.677571	11.322429	10.000491	9.999509	30	6
55	45	8.677743	11.322257	8.678236	11.321764	10.000493	9.999507	15	5
56	44	8.678405	11.321595	8.678900	11.321100	10.000494	9.999506	16	4
57	15	8.679066	11.320934	8.679562	11.320438	10.000496	9.999504	45	3
58	30	8.679726	11.320274	8.680224	11.319776	10.000497	9.999503	30	2
59	45	8.680385	11.319615	8.680884	11.319116	10.000499	9.999501	15	1
60	45	8.681043	11.318957	8.681544	11.318456	10.000500	9.999500	15	0
sec.	min.	cosine	secant	cotangent	tangent	cosecant	sine	sec.	min.
0° 49'		LOG. SINES, &c.						57 deg.	

0° 11'		LOG. SINES, &c. (L.)						2 deg.	
sec.	min.	sine.	coscant.	tangent.	cotangent.	secant.	cosec.	deg.	min.
0	45	8 681043	11.318957	8 481544	11 318456	10.000500	9.999500	15	50
1	15	8 691700	11.318300	8 682202	11 317798	10.000502	9.999498	46	59
2	30	8 682356	11 317644	8 682860	11 317140	10.000504	9.999496	30	57
3	45	8 683011	11.316989	8 683516	11 316484	10.000505	9.999495	15	56
4	46	8 683665	11.316335	8 684172	11 315828	10.000507	9.999493	14	56
5	15	8 684319	11 315682	8 684826	11 315174	10.000508	9.999492	45	55
6	30	8 684971	11 315029	8 685480	11.314520	10.000510	9.999490	30	54
7	45	8 685622	11 314378	8 686133	11.313867	10.000511	9.999489	15	53
8	47	8 686272	11.313728	8 686784	11.313216	10.000513	9.999487	13	52
9	15	8 686921	11 313079	8 687435	11 312565	10.000514	9.999486	45	51
10	30	8 687569	11 312431	8 688085	11 311915	10.000516	9.999484	30	50
11	45	8 688216	11 311784	8 688733	11.311267	10.000517	9.999483	15	49
12	48	8 688862	11 311138	8 689381	11 310619	10.000519	9.999481	12	48
13	15	8 689508	11 310492	8 690028	11 309972	10.000520	9.999480	45	47
14	30	8 690152	11 309848	8 690674	11 309326	10.000522	9.999478	30	46
15	45	8 690795	11 309205	8 691319	11.308681	10.000523	9.999477	15	45
16	49	8 691438	11.308562	8 691963	11 308037	10.000525	9.999475	11	44
17	15	8 692079	11 307921	8 692606	11 307394	10.000527	9.999473	45	43
18	30	8 692720	11 307280	8 693248	11.306752	10.000528	9.999472	30	42
19	45	8 693359	11 306641	8 693889	11.306111	10.000530	9.999470	15	41
20	50	8 693998	11 306002	8 694529	11.305471	10.000531	9.999469	10	40
21	15	8 694636	11 305364	8 695168	11 304832	10.000533	9.999467	45	39
22	30	8 695272	11 304728	8 695807	11.304193	10.000534	9.999466	30	38
23	45	8 695908	11.304092	8 696444	11 303555	10.000536	9.999464	15	37
24	51	8 696543	11 303457	8 697081	11.302919	10.000538	9.999462	9	36
25	15	8 697177	11.302823	8 697716	11 302284	10.000539	9.999461	45	35
26	30	8 697810	11 302190	8 698351	11 301649	10.000541	9.999459	30	34
27	45	8 698442	11 301558	8 698984	11 301016	10.000542	9.999458	15	33
28	52	8 699073	11.300927	8 699617	11.300383	10.000544	9.999456	8	32
29	15	8 699704	11 300296	8 700249	11 299751	10.000545	9.999455	45	31
30	30	8 700333	11 299667	8 700880	11 299120	10.000547	9.999453	30	30
31	45	8 700961	11.299039	8 701510	11 298489	10.000549	9.999451	15	29
32	53	8 701589	11 298411	8 702139	11.297861	10.000550	9.999449	7	28
33	15	8 702215	11.297785	8 702767	11 297233	10.000552	9.999448	45	27
34	30	8 702841	11 297159	8 703395	11 296605	10.000553	9.999447	30	26
35	45	8 703466	11 296534	8 704021	11 295979	10.000555	9.999445	15	25
36	54	8 704090	11 295910	8 704646	11 295354	10.000557	9.999443	6	24
37	15	8 704713	11 295287	8 705271	11.294729	10.000558	9.999442	45	23
38	30	8 705335	11 294665	8 705895	11 294105	10.000560	9.999440	30	22
39	45	8 705956	11 294044	8 706518	11 293482	10.000561	9.999439	15	21
40	55	8 706577	11.293423	8 707139	11.292861	10.000563	9.999437	5	20
41	15	8 707196	11 292804	8 707761	11.292239	10.000565	9.999435	45	19
42	30	8 707815	11 292185	8 708381	11.291619	10.000566	9.999434	30	18
43	45	8 708432	11 291566	8 709000	11 291000	10.000568	9.999432	15	17
44	56	8 709049	11.290951	8 709618	11.290382	10.000569	9.999431	4	16
45	15	8 709665	11 290335	8 710236	11.289764	10.000571	9.999429	45	15
46	30	8 710280	11 289720	8 710853	11 289147	10.000573	9.999427	30	14
47	45	8 710894	11.289106	8 711468	11.288532	10.000574	9.999426	15	13
48	57	8 711507	11.288493	8 712083	11.287917	10.000576	9.999424	8	12
49	15	8 712120	11 287880	8 712697	11.287303	10.000578	9.999422	45	11
50	30	8 712731	11 287269	8 713311	11 286689	10.000579	9.999421	30	10
51	45	8 713342	11.286658	8 713923	11.286077	10.000581	9.999419	15	9
52	58	8 713952	11.286048	8 714534	11 285466	10.000582	9.999418	2	8
53	15	8 714561	11 285439	8 715145	11.284855	10.000584	9.999416	45	7
54	30	8 715169	11 284831	8 715755	11.284245	10.000586	9.999414	30	6
55	45	8 715776	11.284224	8 716364	11.283636	10.000587	9.999413	15	5
56	59	8 716383	11.283617	8 716972	11.283029	10.000589	9.999411	1	4
57	15	8 716998	11.283012	8 717579	11.282421	10.000591	9.999409	45	3
58	30	8 717593	11 282407	8 718185	11.281815	10.000592	9.999408	30	2
59	45	8 718197	11.281803	8 718791	11.281209	10.000594	9.999406	15	1
60	60	8 718800	11.281200	8 719396	11.280604	10.000596	9.999404	0	0
sec.	min.	sine.	coscant.	tangent.	cotangent.	secant.	cosec.	deg.	min.

5° 48'

LOG. SINES, &c.

17 deg.

0° 12°.		LOG. SINES, &c. (1.)						3 deg.	
deg.	min.	sine.	coscant.	tangent.	cotangent.	secant.	cos. nat.	sec.	deg.
0	0	8.718800	11.281200	8.719390	11.280604	10.000596	9.999404	60	60
1	15	8.719402	11.280598	8.720000	11.280000	10.000597	9.999403	48	59
2	30	8.720004	11.279996	8.720603	11.279397	10.000599	9.999401	30	58
3	45	8.720604	11.279396	8.721205	11.278795	10.000601	9.999399	15	57
4	1	8.721204	11.278796	8.721806	11.278194	10.000602	9.999398	59	56
5	15	8.721803	11.278197	8.722407	11.277593	10.000604	9.999396	45	55
6	30	8.722401	11.277599	8.723006	11.276994	10.000606	9.999394	30	54
7	45	8.722998	11.277002	8.723605	11.276395	10.000607	9.999393	15	53
8	2	8.723595	11.276405	8.724203	11.275797	10.000609	9.999391	58	52
9	15	8.724190	11.275810	8.724801	11.275199	10.000611	9.999389	46	51
10	30	8.724785	11.275215	8.725397	11.274603	10.000612	9.999388	30	50
11	45	8.725379	11.274621	8.725993	11.274007	10.000614	9.999386	16	49
12	3	8.725973	11.274028	8.726588	11.273412	10.000616	9.999384	57	48
13	15	8.726566	11.273436	8.727182	11.272818	10.000617	9.999383	45	47
14	30	8.727156	11.272844	8.727775	11.272225	10.000619	9.999381	30	46
15	45	8.727747	11.272253	8.728367	11.271633	10.000621	9.999379	15	45
16	4	8.728337	11.271663	8.728959	11.271041	10.000622	9.999378	56	44
17	15	8.728926	11.271074	8.729550	11.270450	10.000624	9.999376	45	43
18	30	8.729514	11.270486	8.730140	11.269860	10.000626	9.999374	30	42
19	45	8.730101	11.269899	8.730729	11.269271	10.000628	9.999372	15	41
20	5	8.730688	11.269312	8.731317	11.268683	10.000629	9.999371	55	40
21	15	8.731274	11.268726	8.731905	11.268095	10.000631	9.999369	45	39
22	30	8.731859	11.268141	8.732492	11.267508	10.000633	9.999367	30	38
23	45	8.732444	11.267556	8.733079	11.266922	10.000634	9.999366	15	37
24	6	8.733027	11.266973	8.733663	11.266337	10.000636	9.999364	54	36
25	15	8.733610	11.266390	8.734248	11.265752	10.000638	9.999362	45	35
26	30	8.734192	11.265809	8.734831	11.265169	10.000639	9.999361	30	34
27	45	8.734773	11.265227	8.735414	11.264586	10.000641	9.999359	15	33
28	7	8.735353	11.264647	8.735996	11.264004	10.000643	9.999357	53	32
29	15	8.735933	11.264067	8.736578	11.263422	10.000645	9.999355	45	31
30	30	8.736512	11.263488	8.737158	11.262842	10.000646	9.999354	30	30
31	45	8.737090	11.262910	8.737738	11.262262	10.000648	9.999352	15	29
32	8	8.737667	11.262333	8.738317	11.261683	10.000650	9.999350	52	28
33	15	8.738244	11.261756	8.738895	11.261105	10.000652	9.999348	45	27
34	30	8.738820	11.261180	8.739473	11.260527	10.000653	9.999347	30	26
35	45	8.739395	11.260605	8.740050	11.259950	10.000655	9.999345	15	25
36	9	8.739969	11.260031	8.740626	11.259374	10.000657	9.999343	51	24
37	15	8.740543	11.259457	8.741201	11.258799	10.000658	9.999342	45	23
38	30	8.741115	11.258885	8.741775	11.258225	10.000660	9.999340	30	22
39	45	8.741687	11.258313	8.742349	11.257651	10.000662	9.999338	15	21
40	10	8.742259	11.257741	8.742922	11.257078	10.000664	9.999336	50	20
41	15	8.742829	11.257171	8.743494	11.256506	10.000665	9.999335	45	19
42	30	8.743399	11.256601	8.744066	11.255934	10.000667	9.999333	30	18
43	45	8.743968	11.256032	8.744637	11.255363	10.000669	9.999331	15	17
44	11	8.744536	11.255464	8.745207	11.254793	10.000671	9.999329	49	16
45	15	8.745103	11.254897	8.745776	11.254224	10.000672	9.999328	45	15
46	30	8.745670	11.254330	8.746344	11.253656	10.000674	9.999326	30	14
47	45	8.746236	11.253764	8.746912	11.253088	10.000676	9.999324	15	13
48	12	8.746801	11.253199	8.747479	11.252521	10.000678	9.999322	48	12
49	15	8.747366	11.252634	8.748045	11.251955	10.000680	9.999320	45	11
50	30	8.747930	11.252070	8.748611	11.251389	10.000681	9.999319	30	10
51	45	8.748493	11.251507	8.749176	11.250824	10.000683	9.999317	15	9
52	13	8.749055	11.250945	8.749740	11.250260	10.000685	9.999315	47	8
53	15	8.749617	11.250383	8.750303	11.249697	10.000687	9.999313	45	7
54	30	8.750178	11.249822	8.750866	11.249134	10.000688	9.999312	30	6
55	45	8.750738	11.249262	8.751428	11.248572	10.000690	9.999310	15	5
56	14	8.751297	11.248703	8.751989	11.248011	10.000692	9.999308	46	4
57	15	8.751856	11.248144	8.752550	11.247450	10.000694	9.999306	45	3
58	30	8.752414	11.247586	8.753109	11.246891	10.000696	9.999304	30	2
59	45	8.752971	11.247029	8.753668	11.246332	10.000697	9.999302	15	1
60	15	8.753528	11.246472	8.754227	11.245773	10.000699	9.999301	45	0
sec.	min.	sine.	coscant.	tangent.	cotangent.	secant.	sine.	sec.	deg.
37 deg.		LOG. SINES, &c.						36 deg.	

0° 13".		LOG. SINES, &c. (t)						3 deg.	
sec	"	sine.	coscant.	tangent.	cotangent.	secant.	cosec.	"	sec.
0	15	8.753528	11.246472	8.754227	11.245773	10.000699	9.999301	45	60
1	15	8.754084	11.245916	8.754784	11.245216	10.000701	9.999299	45	59
2	30	8.754639	11.245361	8.755341	11.244659	10.000703	9.999297	30	58
3	45	8.755193	11.244807	8.755898	11.244102	10.000704	9.999296	15	57
4	18	8.755747	11.244253	8.756453	11.243547	10.000706	9.999294	44	56
5	15	8.756300	11.243700	8.757008	11.242992	10.000708	9.999292	45	55
6	30	8.756852	11.243148	8.757562	11.242438	10.000710	9.999290	30	54
7	45	8.757404	11.242596	8.758115	11.241885	10.000712	9.999288	15	53
8	17	8.757956	11.242045	8.758668	11.241332	10.000714	9.999286	43	52
9	15	8.758505	11.241495	8.759220	11.240780	10.000715	9.999285	45	51
10	■	8.759054	11.240946	8.759771	11.240229	10.000717	9.999283	■	50
11	45	8.759603	11.240397	8.760322	11.239678	10.000719	9.999281	15	49
12	18	8.760151	11.239849	8.760872	11.239128	10.000721	9.999279	42	■
13	■	8.760699	11.239301	8.761421	11.238579	10.000723	9.999277	45	47
14	30	8.761245	11.238755	8.761970	11.238030	10.000724	9.999276	30	46
15	45	8.761791	11.238209	8.762517	11.237483	10.000726	9.999274	15	45
16	19	8.762337	11.237663	8.763065	11.236935	10.000728	9.999272	41	44
17	15	8.762881	11.237119	8.763611	11.236389	10.000730	9.999270	■	43
18	30	8.763425	11.236575	8.764157	11.235843	10.000732	9.999268	30	42
19	45	8.763968	11.236032	8.764702	11.235298	10.000734	9.999266	15	41
20	20	8.764511	11.235489	8.765246	11.234754	10.000735	9.999265	40	40
21	15	8.765053	11.234947	8.765790	11.234210	10.000737	9.999263	45	39
22	30	8.765594	11.234406	8.766331	11.233667	10.000739	9.999261	30	38
23	45	8.766135	11.233865	8.766876	11.233124	10.000741	9.999259	15	37
24	21	8.766675	11.233325	8.767417	11.232583	10.000743	9.999257	39	36
25	15	8.767214	11.232786	8.767958	11.232042	10.000745	9.999255	45	35
26	30	8.767752	11.232248	8.768499	11.231501	10.000747	9.999253	30	34
27	45	8.768290	11.231710	8.769039	11.230961	10.000748	9.999252	15	33
28	22	8.768827	11.231173	8.769578	11.230422	10.000750	9.999250	38	32
29	15	8.769364	11.230636	8.770116	11.229884	10.000752	9.999248	45	31
30	30	8.769900	11.230100	8.770654	11.229346	10.000754	9.999246	30	30
31	45	8.770435	11.229565	8.771191	11.228809	10.000756	9.999244	15	29
32	23	8.770970	11.229030	8.771727	11.228273	10.000758	9.999242	37	28
33	15	8.771504	11.228496	8.772263	11.227737	10.000760	9.999240	45	27
34	30	8.772037	11.227963	8.772798	11.227202	10.000761	9.999239	30	26
35	45	8.772569	11.227431	8.773333	11.226667	10.000763	9.999237	15	25
36	24	8.773101	11.226899	8.773866	11.226134	10.000765	9.999235	36	24
37	15	8.773633	11.226367	8.774400	11.225600	10.000767	9.999233	45	23
38	■	8.774163	11.225837	8.774932	11.225068	10.000769	9.999231	30	22
39	■	8.774693	11.225307	8.775464	11.224536	10.000771	9.999229	15	21
40	25	8.775223	11.224777	8.775995	11.224005	10.000773	9.999227	35	20
41	15	8.775751	11.224249	8.776526	11.223474	10.000775	9.999225	45	19
42	30	8.776279	11.223721	8.777056	11.222944	10.000776	9.999224	30	■
43	45	8.776807	11.223193	8.777585	11.222415	10.000778	9.999222	15	17
44	26	8.777333	11.222667	8.778114	11.221886	10.000780	9.999220	34	16
45	15	8.777859	11.222141	8.778642	11.221358	10.000782	9.999218	45	15
46	30	8.778385	11.221615	8.779169	11.220831	10.000784	9.999216	30	14
47	45	8.778910	11.221090	8.779696	11.220304	10.000786	9.999214	15	13
48	27	8.779434	11.220566	8.780222	11.219778	10.000788	9.999212	33	12
49	15	8.779958	11.220042	8.780747	11.219253	10.000790	9.999210	45	11
50	30	8.780480	11.219520	8.781272	11.218728	10.000792	9.999208	30	10
51	45	8.781003	11.218997	8.781796	11.218204	10.000794	9.999206	15	9
52	28	8.781524	11.218476	8.782320	11.217680	10.000795	9.999205	32	8
53	15	8.782045	11.217955	8.782843	11.217157	10.000797	9.999203	■	7
54	30	8.782566	11.217434	8.783365	11.216635	10.000799	9.999201	30	6
55	45	8.783086	11.216914	8.783887	11.216113	10.000801	9.999199	15	5
56	29	8.783605	11.216395	8.784408	11.215592	10.000803	9.999197	31	4
57	15	8.784123	11.215877	8.784928	11.215072	10.000805	9.999195	45	3
58	■	8.784641	11.215359	8.785448	11.214552	10.000807	9.999193	30	2
59	45	8.785159	11.214841	8.785967	11.214033	10.000809	9.999191	15	1
60	30	8.785675	11.214325	8.786486	11.213514	10.000811	9.999189	30	0
sec	"	sine.	coscant.	tangent.	cotangent.	secant.	cosec.	"	sec.
5° 46".		LOG. SINES, &c.						86 deg.	

0° 14'.		LOG. SINES, &c. (L.)						3 deg.	
sec.	"	sine.	coscant.	tangent.	cotangent.	secant.	cosec.	"	sec.
0	30	8.785675	11.214325	8.786486	11.213514	10.000811	9.999189	30	60
1	15	8.786191	11.213809	8.787004	11.212996	10.000813	9.999187	45	59
2	30	8.786707	11.213293	8.787521	11.212479	10.000815	9.999185	30	58
3	45	8.787222	11.212778	8.788038	11.211962	10.000817	9.999183	15	57
4	31	8.787736	11.212264	8.788554	11.211446	10.000819	9.999181	29	56
5	15	8.788249	11.211751	8.789070	11.210930	10.000821	9.999179	45	55
6	30	8.788762	11.211238	8.789585	11.210415	10.000822	9.999178	30	54
7	45	8.789275	11.210725	8.790099	11.209901	10.000824	9.999176	15	53
8	32	8.789787	11.210213	8.790613	11.209387	10.000826	9.999174	28	52
9	15	8.790298	11.209702	8.791126	11.208874	10.000828	9.999172	45	51
10	30	8.790809	11.209192	8.791639	11.208361	10.000830	9.999170	30	50
11	45	8.791318	11.208682	8.792151	11.207849	10.000832	9.999168	15	49
12	33	8.791828	11.208172	8.792662	11.207338	10.000834	9.999166	27	48
13	15	8.792337	11.207663	8.793173	11.206827	10.000836	9.999164	45	47
14	30	8.792845	11.207155	8.793683	11.206317	10.000838	9.999162	30	46
15	45	8.793352	11.206648	8.794192	11.205808	10.000840	9.999160	15	45
16	34	8.793859	11.206141	8.794701	11.205299	10.000842	9.999158	26	44
17	15	8.794366	11.205634	8.795210	11.204790	10.000844	9.999156	45	43
18	30	8.794872	11.205128	8.795717	11.204283	10.000846	9.999154	30	42
19	45	8.795377	11.204623	8.796225	11.203775	10.000848	9.999152	15	41
20	35	8.795881	11.204119	8.796731	11.203269	10.000850	9.999150	25	40
21	15	8.796385	11.203615	8.797237	11.202763	10.000852	9.999148	45	39
22	30	8.796889	11.203111	8.797743	11.202257	10.000854	9.999146	30	38
23	45	8.797392	11.202608	8.798248	11.201752	10.000856	9.999144	15	37
24	36	8.797894	11.202106	8.798752	11.201248	10.000858	9.999142	24	36
25	15	8.798396	11.201604	8.799256	11.200744	10.000860	9.999140	45	35
26	30	8.798897	11.201103	8.799759	11.200241	10.000862	9.999138	30	34
27	45	8.799397	11.200603	8.800261	11.199739	10.000864	9.999136	15	33
28	37	8.799897	11.200103	8.800763	11.199237	10.000866	9.999134	23	32
29	15	8.800397	11.199603	8.801265	11.198735	10.000868	9.999132	45	31
30	30	8.800896	11.199104	8.801765	11.198235	10.000870	9.999130	30	30
31	45	8.801394	11.198606	8.802266	11.197734	10.000872	9.999128	15	29
32	38	8.801891	11.198109	8.802765	11.197235	10.000874	9.999126	22	28
33	15	8.802389	11.197611	8.803264	11.196736	10.000876	9.999124	45	27
34	30	8.802885	11.197115	8.803763	11.196237	10.000878	9.999122	30	26
35	45	8.803381	11.196619	8.804261	11.195739	10.000880	9.999120	15	25
36	39	8.803876	11.196124	8.804758	11.195242	10.000882	9.999118	21	24
37	15	8.804371	11.195629	8.805255	11.194745	10.000884	9.999116	45	23
38	30	8.804865	11.195135	8.805751	11.194249	10.000886	9.999114	30	22
39	45	8.805359	11.194641	8.806247	11.193753	10.000888	9.999112	15	21
40	40	8.805852	11.194148	8.806742	11.193258	10.000890	9.999110	20	20
41	15	8.806345	11.193655	8.807237	11.192763	10.000892	9.999108	45	19
42	30	8.806837	11.193163	8.807731	11.192269	10.000894	9.999106	30	18
43	45	8.807328	11.192672	8.808224	11.191776	10.000896	9.999104	15	17
44	41	8.807819	11.192181	8.808717	11.191283	10.000898	9.999102	19	16
45	15	8.808309	11.191691	8.809210	11.190790	10.000900	9.999100	45	15
46	30	8.808799	11.191201	8.809701	11.190299	10.000902	9.999098	30	14
47	45	8.809288	11.190712	8.810193	11.189807	10.000904	9.999096	15	13
48	42	8.809777	11.190223	8.810683	11.189317	10.000906	9.999094	18	12
49	15	8.810265	11.189735	8.811173	11.188827	10.000908	9.999092	45	11
50	30	8.810753	11.189247	8.811663	11.188337	10.000910	9.999090	30	10
51	45	8.811240	11.188760	8.812152	11.187848	10.000912	9.999088	15	9
52	43	8.811726	11.188274	8.812641	11.187359	10.000914	9.999086	17	8
53	15	8.812212	11.187788	8.813129	11.186871	10.000916	9.999084	45	7
54	30	8.812698	11.187302	8.813616	11.186384	10.000919	9.999081	30	6
55	45	8.813182	11.186818	8.814103	11.185897	10.000921	9.999079	15	5
56	44	8.813667	11.186333	8.814589	11.185411	10.000923	9.999077	16	4
57	15	8.814150	11.185850	8.815075	11.184925	10.000925	9.999075	45	3
58	30	8.814634	11.185366	8.815560	11.184440	10.000927	9.999073	30	2
59	45	8.815116	11.184884	8.816045	11.183955	10.000929	9.999071	15	1
60	45	8.815598	11.184402	8.816529	11.183471	10.000931	9.999069	15	0
sec.	"	sine.	coscant.	tangent.	cotangent.	secant.	cosec.	"	sec.
3° 45'.		LOG. SINES, &c.						86 deg.	

0° 15'.		LOG. SINES, &c. (v)						3 deg.	
sec.	min.	sine.	coscant.	tangent.	cotangent.	secant.	cosec.	min.	sec.
0	45	8.815598	11.184402	8.816529	11.183471	10.000931	9.999069	15	60
1	15	8.816080	11.183920	8.817013	11.182987	10.000933	9.999067	45	59
2	30	8.816561	11.183439	8.817496	11.182504	10.000935	9.999065	30	58
3	45	8.817042	11.182958	8.817979	11.182021	10.000937	9.999063	15	57
4	46	8.817522	11.182478	8.818461	11.181539	10.000939	9.999061	14	56
5	15	8.818001	11.181999	8.818942	11.181058	10.000941	9.999059	45	55
6	30	8.818480	11.181520	8.819423	11.180577	10.000943	9.999057	30	54
7	45	8.818958	11.181042	8.819904	11.180096	10.000945	9.999055	15	53
8	47	8.819436	11.180564	8.820384	11.179616	10.000948	9.999052	13	52
9	15	8.819914	11.180086	8.820863	11.179137	10.000950	9.999050	45	51
10	30	8.820390	11.179610	8.821342	11.178658	10.000952	9.999048	30	50
11	45	8.820867	11.179133	8.821820	11.178180	10.000954	9.999046	15	49
12	48	8.821342	11.178658	8.822298	11.177702	10.000956	9.999044	12	48
13	15	8.821818	11.178182	8.822776	11.177224	10.000958	9.999042	45	47
14	30	8.822292	11.177708	8.823253	11.176747	10.000960	9.999040	30	46
15	45	8.822767	11.177233	8.823729	11.176271	10.000962	9.999038	15	45
16	49	8.823240	11.176760	8.824205	11.175795	10.000964	9.999036	11	44
17	15	8.823713	11.176287	8.824680	11.175320	10.000966	9.999034	45	43
18	30	8.824186	11.175814	8.825155	11.174845	10.000969	9.999031	30	42
19	45	8.824658	11.175342	8.825629	11.174371	10.000971	9.999029	15	41
20	50	8.825130	11.174870	8.826103	11.173897	10.000973	9.999027	10	40
21	15	8.825601	11.174399	8.826576	11.173424	10.000975	9.999025	45	39
22	30	8.826072	11.173928	8.827048	11.172952	10.000977	9.999023	30	38
23	45	8.826542	11.173458	8.827521	11.172479	10.000979	9.999021	15	37
24	51	8.827011	11.172989	8.827992	11.172008	10.000981	9.999019	9	36
25	15	8.827480	11.172520	8.828464	11.171536	10.000983	9.999017	45	35
26	30	8.827949	11.172051	8.828934	11.171066	10.000986	9.999014	30	34
27	45	8.828417	11.171583	8.829404	11.170596	10.000988	9.999012	15	33
28	52	8.828884	11.171116	8.829874	11.170126	10.000990	9.999010	8	32
29	15	8.829351	11.170649	8.830343	11.169657	10.000992	9.999008	45	31
30	30	8.829818	11.170182	8.830812	11.169188	10.000994	9.999006	30	30
31	45	8.830284	11.169716	8.831280	11.168720	10.000996	9.999004	15	29
32	53	8.830749	11.169251	8.831748	11.168252	10.000998	9.999002	7	28
33	15	8.831214	11.168786	8.832215	11.167785	10.001000	9.999000	45	27
34	30	8.831679	11.168321	8.832682	11.167318	10.001003	9.998997	30	26
35	45	8.832143	11.167857	8.833148	11.166852	10.001005	9.998995	15	25
36	54	8.832607	11.167393	8.833613	11.166387	10.001007	9.998993	6	24
37	15	8.833070	11.166930	8.834079	11.165921	10.001009	9.998991	45	23
38	30	8.833532	11.166468	8.834543	11.165457	10.001011	9.998989	30	22
39	45	8.833994	11.166006	8.835007	11.164993	10.001013	9.998987	15	21
40	55	8.834456	11.165544	8.835471	11.164529	10.001016	9.998984	5	20
41	15	8.834917	11.165083	8.835934	11.164066	10.001018	9.998982	45	19
42	30	8.835377	11.164623	8.836397	11.163603	10.001020	9.998980	30	18
43	45	8.835837	11.164163	8.836859	11.163141	10.001022	9.998978	15	17
44	56	8.836297	11.163703	8.837321	11.162679	10.001024	9.998976	4	16
45	15	8.836756	11.163244	8.837782	11.162218	10.001026	9.998974	45	15
46	30	8.837215	11.162785	8.838243	11.161757	10.001029	9.998971	30	14
47	45	8.837673	11.162327	8.838703	11.161297	10.001031	9.998969	15	13
48	57	8.838130	11.161870	8.839163	11.160837	10.001033	9.998967	3	12
49	15	8.838587	11.161413	8.839623	11.160377	10.001035	9.998965	45	11
50	30	8.839044	11.160956	8.840081	11.159916	10.001037	9.998963	30	10
51	45	8.839500	11.160500	8.840540	11.159460	10.001039	9.998961	15	9
52	58	8.839956	11.160044	8.840998	11.159002	10.001042	9.998958	2	8
53	15	8.840411	11.159589	8.841455	11.158545	10.001044	9.998956	45	7
54	30	8.840866	11.159134	8.841912	11.158088	10.001046	9.998954	30	6
55	45	8.841320	11.158680	8.842368	11.157632	10.001048	9.998952	15	5
56	59	8.841774	11.158226	8.842824	11.157176	10.001050	9.998950	1	4
57	15	8.842227	11.157773	8.843280	11.156720	10.001053	9.998947	45	3
58	30	8.842680	11.157320	8.843735	11.156265	10.001055	9.998945	30	2
59	45	8.843133	11.156867	8.844190	11.155810	10.001057	9.998943	15	1
60	60	8.843584	11.156416	8.844644	11.155356	10.001059	9.998941	0	0
sec.	min.	sine.	coscant.	cotangent.	tangent.	secant.	cosec.	min.	sec.
5° 44'.		LOG. SINES, &c.						86 deg.	

0° 16'.		LOG. SINES, &c. (t.)						4 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosec.	"	sec.
0	0	8.843884	11.156116	8.841644	11.155356	10.001059	9.999941	60	60
1	15	8.844036	11.155964	8.845097	11.154903	10.001061	9.998939	45	59
2	30	8.844487	11.155513	8.845550	11.154450	10.001064	9.998936	30	44
3	45	8.844937	11.155063	8.846003	11.153997	10.001066	9.998934	15	57
4	1	8.845387	11.154613	8.846455	11.153545	10.001068	9.998932	59	56
5	15	8.845837	11.154163	8.846907	11.153093	10.001070	9.998930	45	55
6	30	8.846286	11.153714	8.847358	11.152642	10.001073	9.998927	30	54
7	45	8.846735	11.153265	8.847809	11.152191	10.001075	9.998925	15	53
8	2	8.847183	11.152817	8.848260	11.151740	10.001077	9.998923	58	52
9	15	8.847630	11.152370	8.848710	11.151290	10.001079	9.998921	45	51
10	30	8.848078	11.151922	8.849159	11.150841	10.001081	9.998919	30	50
11	45	8.848524	11.151476	8.849608	11.150392	10.001084	9.998916	15	49
12	3	8.848971	11.151029	8.850057	11.149943	10.001086	9.998914	57	48
13	15	8.849416	11.150584	8.850505	11.149495	10.001088	9.998912	45	47
14	30	8.849862	11.150138	8.850952	11.149048	10.001090	9.998910	30	46
15	45	8.850307	11.149693	8.851399	11.148601	10.001093	9.998907	15	45
16	4	8.850751	11.149249	8.851846	11.148154	10.001095	9.998905	56	44
17	15	8.851195	11.148805	8.852292	11.147708	10.001097	9.998903	45	43
18	30	8.851639	11.148361	8.852738	11.147262	10.001099	9.998901	30	42
19	45	8.852082	11.147916	8.853183	11.146817	10.001102	9.998898	15	41
20	5	8.852524	11.147476	8.853628	11.146372	10.001104	9.998896	55	40
21	15	8.852967	11.147033	8.854073	11.145927	10.001106	9.998894	45	39
22	30	8.853408	11.146592	8.854517	11.145483	10.001108	9.998892	30	38
23	45	8.853850	11.146150	8.854960	11.145040	10.001111	9.998889	15	37
24	6	8.854290	11.145710	8.855403	11.144597	10.001113	9.998887	54	36
25	15	8.854731	11.145269	8.855846	11.144154	10.001115	9.998885	45	35
26	30	8.855171	11.144829	8.856288	11.143712	10.001117	9.998883	30	34
27	45	8.855610	11.144390	8.856730	11.143270	10.001120	9.998880	15	33
28	7	8.856049	11.143951	8.857171	11.142829	10.001122	9.998878	53	32
29	15	8.856488	11.143512	8.857612	11.142388	10.001124	9.998876	45	31
30	30	8.856926	11.143074	8.858053	11.141947	10.001127	9.998873	30	30
31	45	8.857364	11.142636	8.858493	11.141507	10.001129	9.998871	15	29
32	8	8.857801	11.142199	8.858932	11.141068	10.001131	9.998869	52	28
33	15	8.858238	11.141762	8.859371	11.140629	10.001133	9.998867	45	27
34	30	8.858674	11.141326	8.859810	11.140190	10.001136	9.998864	30	26
35	45	8.859110	11.140890	8.860248	11.139752	10.001138	9.998862	15	25
36	9	8.859546	11.140454	8.860686	11.139314	10.001140	9.998860	51	24
37	15	8.859981	11.140019	8.861123	11.138877	10.001143	9.998857	45	23
38	30	8.860415	11.139585	8.861560	11.138440	10.001145	9.998855	30	22
39	45	8.860849	11.139151	8.861997	11.138003	10.001147	9.998853	15	21
40	10	8.861283	11.138717	8.862433	11.137567	10.001149	9.998851	50	20
41	15	8.861717	11.138283	8.862868	11.137132	10.001152	9.998848	45	19
42	30	8.862149	11.137851	8.863303	11.136697	10.001154	9.998846	30	18
43	45	8.862582	11.137418	8.863738	11.136262	10.001156	9.998844	15	17
44	11	8.863014	11.136986	8.864172	11.135828	10.001159	9.998841	49	16
45	15	8.863445	11.136555	8.864606	11.135394	10.001161	9.998839	45	15
46	30	8.863877	11.136123	8.865040	11.134960	10.001163	9.998837	30	14
47	45	8.864307	11.135693	8.865473	11.134527	10.001166	9.998834	15	13
48	12	8.864738	11.135262	8.865905	11.134095	10.001168	9.998832	48	12
49	15	8.865167	11.134833	8.866338	11.133662	10.001170	9.998830	45	11
50	30	8.865597	11.134403	8.866769	11.133231	10.001173	9.998827	30	10
51	45	8.866026	11.133974	8.867201	11.132799	10.001175	9.998825	15	9
52	13	8.866454	11.133546	8.867632	11.132368	10.001177	9.998823	47	8
53	15	8.866883	11.133117	8.868062	11.131938	10.001180	9.998820	45	7
54	30	8.867310	11.132690	8.868492	11.131508	10.001182	9.998818	30	6
55	45	8.867738	11.132262	8.868922	11.131078	10.001184	9.998816	15	5
56	14	8.868165	11.131835	8.869351	11.130649	10.001187	9.998813	46	4
57	15	8.868591	11.131409	8.869780	11.130220	10.001189	9.998811	45	3
58	30	8.869017	11.130983	8.870208	11.129792	10.001191	9.998809	30	2
59	45	8.869443	11.130557	8.870636	11.129364	10.001194	9.998806	15	1
60	15	8.869868	11.130132	8.871064	11.128936	10.001196	9.998804	45	0
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosec.	"	sec.
5° 43'.		LOG. SINES, &c.						85 deg.	

0° 17'		LOG. SINES, &c. (1.)						1 deg.	
sec.	min.	sin.	coscant.	tangent.	cotangent.	secant.	cosec.	sec.	min.
0	15	8.869868	11.130132	8.871064	11.128936	10.001196	9.998804	45	60
1	15	8.870293	11.129707	8.871491	11.128509	10.001198	9.998802	45	59
2	30	8.870717	11.129283	8.871918	11.128082	10.001201	9.998800	30	58
3	45	8.871141	11.128859	8.872344	11.127656	10.001203	9.998797	15	57
4	16	8.871565	11.128435	8.872770	11.127230	10.001205	9.998795	44	56
5	15	8.871989	11.128012	8.873195	11.126805	10.001208	9.998792	45	55
6	30	8.872410	11.127590	8.873620	11.126380	10.001210	9.998790	30	54
7	45	8.872833	11.127167	8.874045	11.125955	10.001212	9.998788	15	53
8	17	8.873255	11.126745	8.874469	11.125531	10.001215	9.998785	43	52
9	15	8.873676	11.126324	8.874893	11.125107	10.001217	9.998783	45	51
10	30	8.874097	11.125903	8.875317	11.124683	10.001220	9.998780	30	50
11	45	8.874518	11.125482	8.875740	11.124260	10.001222	9.998778	15	49
12	18	8.874938	11.125062	8.876162	11.123838	10.001224	9.998776	42	48
13	15	8.875358	11.124642	8.876584	11.123416	10.001227	9.998773	45	47
14	30	8.875777	11.124223	8.877006	11.122994	10.001229	9.998771	30	46
15	45	8.876196	11.123801	8.877428	11.122572	10.001231	9.998769	15	45
16	19	8.876615	11.123385	8.877849	11.122151	10.001234	9.998766	41	44
17	15	8.877033	11.122967	8.878269	11.121731	10.001236	9.998764	45	43
18	30	8.877451	11.122549	8.878689	11.121311	10.001239	9.998761	30	42
19	45	8.877868	11.122132	8.879109	11.120891	10.001241	9.998759	15	41
20	20	8.878285	11.121715	8.879529	11.120471	10.001243	9.998757	40	40
21	15	8.878702	11.121298	8.879948	11.120052	10.001246	9.998754	45	39
22	30	8.879118	11.120882	8.880366	11.119634	10.001248	9.998752	30	38
23	45	8.879534	11.120466	8.880784	11.119216	10.001251	9.998749	15	37
24	21	8.879949	11.120051	8.881202	11.118798	10.001253	9.998747	39	36
25	15	8.880364	11.119636	8.881620	11.118380	10.001255	9.998745	45	35
26	30	8.880779	11.119221	8.882037	11.117963	10.001258	9.998742	30	34
27	45	8.881193	11.118807	8.882453	11.117547	10.001260	9.998740	15	33
28	22	8.881607	11.118393	8.882869	11.117131	10.001263	9.998737	38	32
29	15	8.882020	11.117980	8.883285	11.116715	10.001265	9.998735	45	31
30	30	8.882433	11.117567	8.883701	11.116299	10.001267	9.998733	30	30
31	45	8.882846	11.117154	8.884116	11.115884	10.001270	9.998730	15	29
32	23	8.883258	11.116742	8.884530	11.115470	10.001272	9.998728	37	28
33	15	8.883670	11.116330	8.884945	11.115055	10.001275	9.998725	45	27
34	30	8.884081	11.115919	8.885358	11.114642	10.001277	9.998723	30	26
35	45	8.884492	11.115508	8.885772	11.114228	10.001279	9.998721	15	25
36	24	8.884903	11.115097	8.886185	11.113815	10.001282	9.998718	36	24
37	15	8.885313	11.114687	8.886598	11.113402	10.001284	9.998716	45	23
38	30	8.885723	11.114277	8.887010	11.112990	10.001287	9.998713	30	22
39	45	8.886133	11.113867	8.887422	11.112578	10.001289	9.998711	15	21
40	25	8.886542	11.113458	8.887833	11.112167	10.001292	9.998708	35	20
41	15	8.886950	11.113050	8.888244	11.111756	10.001294	9.998706	45	19
42	30	8.887359	11.112641	8.888655	11.111345	10.001297	9.998703	30	18
43	45	8.887767	11.112233	8.889066	11.110934	10.001299	9.998701	15	17
44	26	8.888174	11.111826	8.889476	11.110524	10.001301	9.998699	34	16
45	15	8.888581	11.111419	8.889885	11.110115	10.001304	9.998696	45	15
46	30	8.888988	11.111012	8.890294	11.109706	10.001306	9.998694	30	14
47	45	8.889395	11.110605	8.890703	11.109297	10.001309	9.998691	15	13
48	27	8.889801	11.110199	8.891112	11.108888	10.001311	9.998689	33	12
49	15	8.890206	11.109794	8.891520	11.108480	10.001314	9.998686	45	11
50	30	8.890612	11.109388	8.891928	11.108072	10.001316	9.998684	30	10
51	45	8.891016	11.108984	8.892335	11.107665	10.001319	9.998681	15	9
52	28	8.891421	11.108579	8.892742	11.107258	10.001321	9.998679	32	8
53	15	8.891825	11.108175	8.893148	11.106852	10.001324	9.998676	45	7
54	30	8.892229	11.107771	8.893555	11.106445	10.001326	9.998674	30	6
55	45	8.892632	11.107368	8.893961	11.106039	10.001329	9.998671	15	5
56	29	8.893036	11.106963	8.894366	11.105634	10.001331	9.998669	31	4
57	15	8.893440	11.106562	8.894771	11.105229	10.001333	9.998667	45	3
58	30	8.893844	11.106160	8.895176	11.104824	10.001336	9.998664	30	2
59	45	8.894248	11.105758	8.895580	11.104420	10.001338	9.998662	15	1
60	30	8.894653	11.105357	8.895984	11.104016	10.001341	9.998659	30	0
sec.	min.	sin.	coscant.	tangent.	cotangent.	secant.	cosec.	sec.	min.
0° 42'		LOG. SINES, &c.						85 deg.	

0° 18'.		LOG. SINES, &c. (L.)						4 deg.	
	size	coscant.	tangent.	cotangent.	secant.	cosine.		sec.	
30	8.894643	11.103357	8.895984	11.104016	10.001341	9.998659	30	60	
15	8.895044	11.103956	8.896388	11.103612	10.001343	9.998657	45	59	
30	8.895445	11.104555	8.896791	11.103209	10.001346	9.998654	30	58	
45	8.895845	11.104155	8.897194	11.102806	10.001348	9.998652	15	57	
31	8.896245	11.103755	8.897597	11.102404	10.001351	9.998649	29	56	
15	8.896645	11.103355	8.897998	11.102002	10.001353	9.998647	45	55	
30	8.897044	11.102956	8.898400	11.101600	10.001356	9.998644	30	54	
45	8.897443	11.102557	8.898802	11.101198	10.001358	9.998642	15	53	
32	8.897842	11.102158	8.899203	11.100797	10.001361	9.998639	28	52	
15	8.898240	11.101760	8.899603	11.100397	10.001363	9.998637	45	51	
30	8.898639	11.101362	8.900004	11.099996	10.001366	9.998634	30	50	
45	8.899035	11.100965	8.900403	11.099597	10.001368	9.998632	15	49	
33	8.899432	11.100568	8.900803	11.099197	10.001371	9.998629	27	48	
15	8.899829	11.100171	8.901202	11.098798	10.001373	9.998627	45	47	
30	8.900225	11.099775	8.901601	11.098399	10.001376	9.998624	30	46	
45	8.900621	11.099379	8.902000	11.098000	10.001378	9.998622	15	45	
34	8.901017	11.098983	8.902398	11.097602	10.001381	9.998619	26	44	
15	8.901412	11.098588	8.902795	11.097205	10.001384	9.998617	45	43	
30	8.901807	11.098193	8.903193	11.096807	10.001386	9.998614	30	42	
45	8.902201	11.097799	8.903590	11.096410	10.001389	9.998611	15	41	
35	8.902595	11.097405	8.903987	11.096013	10.001391	9.998609	25	40	
15	8.902990	11.097011	8.904383	11.095617	10.001394	9.998606	45	39	
30	8.903383	11.096617	8.904779	11.095221	10.001396	9.998604	30	38	
45	8.903776	11.096224	8.905174	11.094826	10.001399	9.998601	15	37	
36	8.904170	11.095832	8.905570	11.094430	10.001401	9.998599	24	36	
15	8.904561	11.095439	8.905965	11.094035	10.001404	9.998596	45	35	
30	8.904953	11.095047	8.906359	11.093641	10.001406	9.998594	30	34	
45	8.905345	11.094655	8.906753	11.093247	10.001409	9.998591	15	33	
37	8.905736	11.094264	8.907147	11.092853	10.001411	9.998589	23	32	
15	8.906127	11.093873	8.907541	11.092459	10.001414	9.998586	45	31	
30	8.906517	11.093483	8.907934	11.092066	10.001417	9.998583	30	30	
45	8.906908	11.093092	8.908327	11.091673	10.001419	9.998581	15	29	
38	8.907297	11.092703	8.908719	11.091281	10.001422	9.998578	22	28	
15	8.907687	11.092313	8.909111	11.090889	10.001424	9.998576	45	27	
30	8.908076	11.091924	8.909503	11.090497	10.001427	9.998573	30	26	
45	8.908465	11.091535	8.909894	11.090106	10.001429	9.998571	15	25	
39	8.908853	11.091147	8.910285	11.089715	10.001432	9.998568	21	24	
15	8.909242	11.090758	8.910676	11.089324	10.001434	9.998566	45	23	
30	8.909629	11.090371	8.911066	11.088934	10.001437	9.998563	30	22	
45	8.910017	11.089983	8.911456	11.088544	10.001440	9.998561	15	21	
40	8.910404	11.089596	8.911846	11.088154	10.001442	9.998558	20	20	
15	8.910791	11.089209	8.912235	11.087765	10.001445	9.998555	45	19	
30	8.911177	11.088823	8.912624	11.087376	10.001447	9.998553	30	18	
45	8.911563	11.088437	8.913013	11.086987	10.001450	9.998551	15	17	
41	8.911949	11.088051	8.913401	11.086599	10.001453	9.998547	19	16	
15	8.912334	11.087666	8.913789	11.086211	10.001455	9.998545	45	15	
30	8.912719	11.087281	8.914177	11.085823	10.001458	9.998542	30	14	
45	8.913104	11.086896	8.914564	11.085436	10.001460	9.998540	15	13	
42	8.913488	11.086512	8.914951	11.085049	10.001463	9.998537	18	12	
15	8.913872	11.086128	8.915337	11.084663	10.001465	9.998535	45	11	
30	8.914256	11.085744	8.915724	11.084276	10.001468	9.998532	30	10	
45	8.914639	11.085361	8.916110	11.083890	10.001471	9.998529	15	9	
43	8.915022	11.084978	8.916495	11.083505	10.001473	9.998527	17	8	
15	8.915404	11.084596	8.916880	11.083120	10.001476	9.998524	45	7	
30	8.915787	11.084213	8.917265	11.082735	10.001478	9.998522	30	6	
45	8.916169	11.083831	8.917650	11.082350	10.001481	9.998519	15	5	
44	8.916550	11.083450	8.918034	11.081966	10.001484	9.998516	16	4	
15	8.916932	11.083068	8.918418	11.081582	10.001486	9.998514	45	3	
30	8.917312	11.082688	8.918801	11.081199	10.001489	9.998511	30	2	
45	8.917693	11.082307	8.919185	11.080815	10.001492	9.998508	15	1	
45	8.918073	11.081927	8.919567	11.080433	10.001494	9.998506	15	0	
	cosine.	secant.	cotangent.	tangent.	secant.	cosine.		sec.	
5° 41'.		LOG. SINES, &c.						85 deg.	

0° 19'		LOG. SINES, &c. (1.)						4 deg.	
sec.	min.	sine.	cosine.	tangent.	cotangent.	secant.	cosec.	sec.	min.
0	45	8.918073	11.081927	8.919567	11.080433	10.001494	9.998506	15	59
1	■	8.918453	11.081547	8.919950	11.080050	10.001497	9.998501	45	59
2	30	8.918833	11.081167	8.920332	11.079668	10.001499	9.998501	30	58
3	45	8.919212	11.080788	8.920714	11.079286	10.001502	9.998498	15	57
4	46	8.919591	11.080409	8.921096	11.078904	10.001505	9.998498	14	56
5	15	8.919970	11.080030	8.921477	11.078523	10.001507	9.998493	45	55
6	30	8.920348	11.079652	8.921858	11.078142	10.001510	9.998490	30	54
7	45	8.920726	11.079274	8.922238	11.077762	10.001513	9.998487	15	53
8	47	8.921103	11.078897	8.922619	11.077381	10.001515	9.998485	13	52
9	15	8.921481	11.078519	8.922998	11.077002	10.001518	9.998482	45	51
10	30	8.921858	11.078142	8.923378	11.076622	10.001521	9.998479	30	50
11	45	8.922234	11.077766	8.923757	11.076243	10.001523	9.998477	15	49
12	48	8.922610	11.077390	8.924136	11.075864	10.001526	9.998474	12	48
13	15	8.922986	11.077014	8.924515	11.075485	10.001529	9.998471	45	47
14	30	8.923362	11.076638	8.924893	11.075107	10.001531	9.998469	30	46
15	45	8.923737	11.076263	8.925271	11.074729	10.001534	9.998466	15	45
16	49	8.924112	11.075888	8.925649	11.074351	10.001536	9.998464	11	44
17	15	8.924487	11.075513	8.926026	11.073974	10.001539	9.998461	45	43
18	30	8.924861	11.075139	8.926403	11.073597	10.001542	9.998458	30	42
19	45	8.925235	11.074765	8.926780	11.073220	10.001544	9.998456	15	41
20	50	8.925609	11.074391	8.927156	11.072844	10.001547	9.998453	10	40
21	15	8.925982	11.074018	8.927532	11.072468	10.001550	9.998450	45	39
22	30	8.926355	11.073645	8.927908	11.072092	10.001552	9.998448	30	38
23	45	8.926728	11.073272	8.928283	11.071717	10.001555	9.998445	15	37
24	51	8.927100	11.072900	8.928658	11.071342	10.001558	9.998442	9	36
25	15	8.927472	11.072528	8.929033	11.070967	10.001561	9.998440	45	35
26	30	8.927844	11.072156	8.929407	11.070591	10.001563	9.998437	30	34
27	45	8.928215	11.071785	8.929781	11.070219	10.001566	9.998434	15	33
28	52	8.928587	11.071413	8.930155	11.069845	10.001569	9.998431	8	32
29	15	8.928957	11.071043	8.930529	11.069471	10.001571	9.998429	45	31
30	30	8.929328	11.070672	8.930902	11.069098	10.001574	9.998426	30	30
31	45	8.929698	11.070302	8.931275	11.068725	10.001577	9.998423	15	29
32	53	8.930068	11.069932	8.931647	11.068353	10.001579	9.998421	7	28
33	15	8.930437	11.069563	8.932019	11.067981	10.001582	9.998418	45	27
34	30	8.930806	11.069194	8.932391	11.067609	10.001585	9.998415	30	26
35	45	8.931175	11.068825	8.932763	11.067237	10.001587	9.998413	15	25
36	54	8.931544	11.068456	8.933134	11.066864	10.001590	9.998410	6	24
37	15	8.931912	11.068088	8.933505	11.066493	10.001593	9.998407	45	23
38	30	8.932280	11.067720	8.933876	11.066124	10.001596	9.998404	30	22
39	45	8.932648	11.067352	8.934246	11.065754	10.001598	9.998402	15	21
40	55	8.933015	11.066985	8.934616	11.065384	10.001601	9.998399	5	20
41	15	8.933382	11.066618	8.934986	11.065014	10.001604	9.998396	45	19
42	30	8.933749	11.066251	8.935355	11.064645	10.001606	9.998394	30	18
43	45	8.934115	11.065885	8.935724	11.064276	10.001609	9.998391	15	17
44	56	8.934481	11.065519	8.936093	11.063907	10.001612	9.998389	4	16
45	15	8.934847	11.065153	8.936461	11.063539	10.001615	9.998386	45	15
46	30	8.935212	11.064788	8.936830	11.063170	10.001617	9.998383	30	14
47	45	8.935577	11.064423	8.937197	11.062803	10.001620	9.998380	15	13
48	57	8.935942	11.064058	8.937565	11.062435	10.001623	9.998377	3	12
49	15	8.936307	11.063693	8.937932	11.062068	10.001626	9.998374	45	11
50	30	8.936671	11.063329	8.938299	11.061701	10.001628	9.998372	30	10
51	45	8.937035	11.062965	8.938666	11.061334	10.001631	9.998369	15	9
52	58	8.937398	11.062602	8.939032	11.060968	10.001634	9.998366	2	8
53	15	8.937762	11.062238	8.939398	11.060602	10.001637	9.998363	45	7
54	30	8.938125	11.061875	8.939764	11.060236	10.001639	9.998361	30	6
55	45	8.938487	11.061513	8.940129	11.059871	10.001642	9.998358	15	5
56	59	8.938850	11.061150	8.940494	11.059506	10.001645	9.998355	1	4
57	■	8.939212	11.060788	8.940859	11.059141	10.001648	9.998352	45	3
58	30	8.939573	11.060427	8.941224	11.058776	10.001650	9.998350	30	2
59	46	8.939935	11.060065	8.941588	11.058412	10.001653	9.998347	15	1
60	60	8.940296	11.059704	8.941952	11.058048	10.001656	9.998344	0	0
sec.	min.	sine.	cosine.	tangent.	cotangent.	secant.	cosec.	sec.	min.
5° 40'		LOG. SINES, &c.						85 deg.	

0° 20'		LOG. SINES, &c. (L)						5 deg.	
sec	min.	coscant.	languar	cotangent	secant	cosine		sec	min.
0	0	8.940296	11.059704	8.941952	11.058048	10.001656	9.998344	60	60
1	15	8.940657	11.059343	8.942315	11.057685	10.001659	9.998341	45	59
2	30	8.941017	11.058983	8.942679	11.057321	10.001661	9.998339	30	58
3	45	8.941378	11.058622	8.943042	11.056958	10.001664	9.998336	15	57
4	1	8.941738	11.058260	8.943404	11.056596	10.001667	9.998333	59	56
5	15	8.942097	11.057903	8.943767	11.056233	10.001670	9.998330	45	55
6	30	8.942456	11.057544	8.944129	11.055871	10.001672	9.998328	30	54
7	45	8.942816	11.057184	8.944491	11.055509	10.001675	9.998325	15	53
8	2	8.943174	11.056828	8.944852	11.055148	10.001678	9.998322	58	52
9	15	8.943533	11.056467	8.945213	11.054787	10.001681	9.998319	45	51
10	30	8.943891	11.056109	8.945574	11.054426	10.001684	9.998316	30	50
11	45	8.944249	11.055751	8.945935	11.054065	10.001686	9.998314	15	49
12	3	8.944606	11.055394	8.946295	11.053705	10.001689	9.998311	57	48
13	15	8.944963	11.055037	8.946655	11.053345	10.001692	9.998308	45	47
14	30	8.945320	11.054680	8.947015	11.052985	10.001695	9.998305	30	46
15	45	8.945677	11.054323	8.947375	11.052625	10.001698	9.998302	15	45
16	4	8.946033	11.053967	8.947734	11.052266	10.001700	9.998300	56	44
17	15	8.946390	11.053610	8.948093	11.051907	10.001703	9.998297	45	43
18	30	8.946745	11.053255	8.948451	11.051549	10.001706	9.998294	30	42
19	45	8.947101	11.052899	8.948810	11.051190	10.001709	9.998291	15	41
20	5	8.947456	11.052544	8.949168	11.050832	10.001712	9.998288	55	40
21	15	8.947811	11.052189	8.949525	11.050475	10.001714	9.998286	45	39
22	30	8.948166	11.051834	8.949883	11.050117	10.001717	9.998283	30	38
23	45	8.948520	11.051480	8.950240	11.049760	10.001720	9.998280	15	37
24	6	8.948874	11.051126	8.950597	11.049403	10.001723	9.998277	54	36
25	15	8.949228	11.050772	8.950953	11.049047	10.001726	9.998274	45	35
26	30	8.949581	11.050419	8.951309	11.048691	10.001728	9.998272	30	34
27	45	8.949934	11.050066	8.951665	11.048335	10.001731	9.998269	15	33
28	7	8.950287	11.049713	8.952021	11.047979	10.001734	9.998266	53	32
29	15	8.950640	11.049360	8.952376	11.047624	10.001737	9.998263	45	31
30	30	8.950992	11.049008	8.952732	11.047268	10.001740	9.998260	30	30
31	45	8.951344	11.048656	8.953086	11.046914	10.001743	9.998257	15	29
32	8	8.951696	11.048304	8.953441	11.046559	10.001745	9.998255	52	28
33	15	8.952047	11.047953	8.953795	11.046205	10.001748	9.998252	45	27
34	30	8.952398	11.047602	8.954149	11.045851	10.001751	9.998249	30	26
35	45	8.952749	11.047251	8.954503	11.045497	10.001754	9.998246	15	25
36	9	8.953100	11.046900	8.954856	11.045144	10.001757	9.998243	51	24
37	15	8.953450	11.046550	8.955209	11.044791	10.001760	9.998240	45	23
38	30	8.953800	11.046200	8.955562	11.044438	10.001762	9.998238	30	22
39	45	8.954150	11.045850	8.955915	11.044085	10.001765	9.998235	15	21
40	10	8.954499	11.045501	8.956267	11.043733	10.001768	9.998232	50	20
41	15	8.954848	11.045152	8.956619	11.043381	10.001771	9.998229	45	19
42	30	8.955197	11.044803	8.956971	11.043029	10.001774	9.998226	30	18
43	45	8.955546	11.044454	8.957322	11.042678	10.001777	9.998223	15	17
44	11	8.955894	11.044106	8.957673	11.042327	10.001780	9.998220	49	16
45	15	8.956242	11.043758	8.958024	11.041976	10.001783	9.998217	45	15
46	30	8.956590	11.043410	8.958375	11.041625	10.001785	9.998215	30	14
47	45	8.956937	11.043063	8.958725	11.041275	10.001788	9.998212	15	13
48	12	8.957284	11.042716	8.959075	11.040925	10.001791	9.998209	48	12
49	15	8.957631	11.042369	8.959425	11.040575	10.001794	9.998206	45	11
50	30	8.957978	11.042022	8.959775	11.040225	10.001797	9.998203	30	10
51	45	8.958324	11.041676	8.960124	11.039876	10.001800	9.998200	15	9
52	13	8.958670	11.041330	8.960473	11.039527	10.001803	9.998197	47	8
53	15	8.959016	11.040984	8.960821	11.039179	10.001806	9.998194	45	7
54	30	8.959361	11.040639	8.961170	11.038830	10.001808	9.998192	30	6
55	45	8.959707	11.040293	8.961519	11.038482	10.001811	9.998189	15	5
56	14	8.960052	11.039948	8.961866	11.038134	10.001814	9.998186	46	4
57	15	8.960396	11.039604	8.962213	11.037787	10.001817	9.998183	45	3
58	30	8.960741	11.039259	8.962561	11.037439	10.001820	9.998180	30	2
59	45	8.961085	11.038915	8.962908	11.037092	10.001823	9.998177	15	1
60	15	8.961429	11.038571	8.963254	11.036746	10.001826	9.998174	45	0
sec.	min.	coscant.	cotangent.	tangent.	secant.	sine.		sec.	min.
0° 30'		LOG. SINES, &c.						84 deg.	

0° 21'.		LOG. SINES, &c. (1)						5 deg.	
sec.	"	sine.	coscant.	tangent.	cotangent.	secant.	cosecant.	"	sec.
0	15	8.961429	11.038571	8.963254	11.036746	10.001826	9.998174	45	60
1	15	8.961772	11.038228	8.963601	11.036399	10.001829	9.998171	45	59
2	30	8.962116	11.037884	8.963947	11.036053	10.001832	9.998168	30	58
3	45	8.962459	11.037541	8.964293	11.035707	10.001834	9.998166	15	57
4	16	8.962801	11.037199	8.964639	11.035361	10.001837	9.998163	44	56
5	15	8.963144	11.036856	8.964984	11.035016	10.001840	9.998160	45	55
6	30	8.963486	11.036514	8.965329	11.034671	10.001843	9.998157	30	54
7	45	8.963828	11.036172	8.965674	11.034326	10.001846	9.998154	15	53
8	17	8.964170	11.035830	8.966019	11.033981	10.001849	9.998151	43	52
9	15	8.964511	11.035489	8.966363	11.033637	10.001852	9.998148	45	51
10	30	8.964852	11.035148	8.966707	11.033293	10.001855	9.998145	30	50
11	45	8.965193	11.034807	8.967051	11.032949	10.001858	9.998142	15	49
12	18	8.965534	11.034466	8.967394	11.032606	10.001861	9.998139	42	48
13	15	8.965874	11.034126	8.967738	11.032262	10.001864	9.998136	45	47
14	30	8.966214	11.033786	8.968081	11.031919	10.001867	9.998133	30	46
15	45	8.966554	11.033446	8.968423	11.031577	10.001870	9.998130	15	45
16	19	8.966893	11.033107	8.968766	11.031234	10.001873	9.998127	41	44
17	15	8.967233	11.032767	8.969109	11.030892	10.001875	9.998125	45	43
18	30	8.967572	11.032428	8.969450	11.030550	10.001878	9.998122	30	42
19	45	8.967910	11.032090	8.969792	11.030208	10.001881	9.998119	15	41
20	20	8.968249	11.031751	8.970133	11.029867	10.001884	9.998116	40	40
21	15	8.968587	11.031413	8.970474	11.029526	10.001887	9.998113	45	39
22	30	8.968925	11.031075	8.970815	11.029185	10.001890	9.998110	30	38
23	45	8.969262	11.030738	8.971156	11.028844	10.001893	9.998107	15	37
24	21	8.969600	11.030400	8.971496	11.028504	10.001896	9.998104	39	36
25	15	8.969937	11.030063	8.971836	11.028164	10.001899	9.998101	45	35
26	30	8.970274	11.029726	8.972176	11.027824	10.001902	9.998098	30	34
27	45	8.970610	11.029390	8.972515	11.027485	10.001905	9.998095	15	33
28	22	8.970947	11.029053	8.972855	11.027145	10.001908	9.998092	38	32
29	15	8.971283	11.028717	8.973194	11.026806	10.001911	9.998089	45	31
30	30	8.971619	11.028381	8.973532	11.026468	10.001914	9.998086	30	30
31	45	8.971954	11.028046	8.973871	11.026129	10.001917	9.998083	15	29
32	23	8.972289	11.027711	8.974209	11.025791	10.001920	9.998080	37	28
33	15	8.972624	11.027376	8.974547	11.025453	10.001923	9.998077	45	27
34	30	8.972959	11.027041	8.974885	11.025115	10.001926	9.998074	30	26
35	45	8.973294	11.026706	8.975222	11.024778	10.001929	9.998071	15	25
36	24	8.973628	11.026372	8.975560	11.024440	10.001932	9.998068	36	24
37	15	8.973962	11.026038	8.975897	11.024103	10.001935	9.998065	45	23
38	30	8.974296	11.025704	8.976233	11.023767	10.001938	9.998062	30	22
39	45	8.974629	11.025371	8.976570	11.023430	10.001941	9.998059	15	21
40	25	8.974962	11.025038	8.976906	11.023094	10.001944	9.998056	35	20
41	15	8.975295	11.024705	8.977242	11.022758	10.001947	9.998053	45	19
42	30	8.975628	11.024372	8.977578	11.022422	10.001950	9.998050	30	18
43	45	8.975960	11.024040	8.977913	11.022087	10.001953	9.998047	15	17
44	26	8.976293	11.023707	8.978248	11.021752	10.001956	9.998044	34	16
45	15	8.976624	11.023376	8.978583	11.021417	10.001959	9.998041	45	15
46	30	8.976956	11.023044	8.978918	11.021082	10.001962	9.998038	30	14
47	45	8.977288	11.022712	8.979252	11.020748	10.001965	9.998035	15	13
48	27	8.977619	11.022381	8.979586	11.020414	10.001968	9.998032	33	12
49	15	8.977950	11.022050	8.979920	11.020080	10.001971	9.998029	45	11
50	30	8.978280	11.021720	8.980254	11.019746	10.001974	9.998026	30	10
51	45	8.978611	11.021389	8.980587	11.019413	10.001977	9.998023	15	9
52	28	8.978941	11.021059	8.980921	11.019079	10.001980	9.998020	32	8
53	15	8.979271	11.020729	8.981253	11.018747	10.001983	9.998017	45	7
54	30	8.979600	11.020400	8.981586	11.018414	10.001986	9.998014	30	6
55	45	8.979930	11.020070	8.981919	11.018081	10.001989	9.998011	15	5
56	29	8.980259	11.019741	8.982251	11.017749	10.001992	9.998008	31	4
57	15	8.980588	11.019412	8.982583	11.017417	10.001995	9.998005	45	3
58	30	8.980916	11.019084	8.982914	11.017086	10.001998	9.998002	30	2
59	45	8.981245	11.018755	8.983246	11.016754	10.002001	9.997999	15	1
60	30	8.981573	11.018427	8.983577	11.016423	10.002004	9.997996	30	0
sec.	"	sine.	coscant.	tangent.	cotangent.	secant.	cosecant.	"	sec.
5° 38'.		LOG. SINES, &c.						64 deg.	

0° 22'.		LOG. SINES, &c. (t.)						5 deg.	
sec.	"	sine	cosine	tangent	cotangent	secant	cosec.	"	sec.
0	30	8.981573	11.018427	8.983577	11.016423	10.002004	9.997996	30	60
1	15	8.981901	11.018099	8.983908	11.016092	10.002007	9.997993	45	59
2	30	8.982228	11.017772	8.984238	11.015762	10.002010	9.997990	30	58
3	45	8.982556	11.017444	8.984569	11.015431	10.002013	9.997987	15	57
4	31	8.982883	11.017117	8.984899	11.015101	10.002016	9.997984	29	56
5	15	8.983210	11.016790	8.985229	11.014771	10.002019	9.997981	45	55
6	30	8.983536	11.016464	8.985559	11.014441	10.002022	9.997978	30	54
7	45	8.983863	11.016137	8.985886	11.014112	10.002025	9.997975	15	53
8	32	8.984189	11.015811	8.986217	11.013783	10.002028	9.997972	28	52
9	15	8.984515	11.015485	8.986546	11.013454	10.002032	9.997968	45	51
10	30	8.984840	11.015160	8.986875	11.013125	10.002035	9.997965	30	50
11	45	8.985166	11.014834	8.987203	11.012797	10.002038	9.997962	15	49
12	33	8.985491	11.014509	8.987532	11.012468	10.002041	9.997959	27	48
13	15	8.985816	11.014184	8.987860	11.012140	10.002044	9.997956	45	47
14	30	8.986140	11.013860	8.988187	11.011813	10.002047	9.997953	30	46
15	45	8.986465	11.013535	8.988515	11.011485	10.002050	9.997950	15	45
16	34	8.986789	11.013211	8.988842	11.011158	10.002053	9.997947	26	44
17	15	8.987113	11.012887	8.989169	11.010831	10.002056	9.997944	45	43
18	30	8.987437	11.012563	8.989496	11.010504	10.002059	9.997941	30	42
19	45	8.987760	11.012240	8.989822	11.010178	10.002062	9.997938	15	41
20	35	8.988083	11.011917	8.990149	11.009851	10.002065	9.997935	25	40
21	15	8.988406	11.011594	8.990475	11.009525	10.002068	9.997932	45	39
22	30	8.988729	11.011271	8.990800	11.009200	10.002072	9.997929	30	38
23	45	8.989051	11.010949	8.991126	11.008874	10.002075	9.997925	15	37
24	36	8.989374	11.010626	8.991451	11.008549	10.002078	9.997922	24	36
25	15	8.989696	11.010304	8.991776	11.008224	10.002081	9.997919	45	35
26	30	8.990017	11.009983	8.992101	11.007899	10.002084	9.997916	30	34
27	45	8.990339	11.009661	8.992426	11.007574	10.002087	9.997913	15	33
28	37	8.990660	11.009340	8.992750	11.007250	10.002090	9.997910	23	32
29	15	8.990981	11.009019	8.993071	11.006926	10.002093	9.997907	45	31
30	30	8.991302	11.008698	8.993398	11.006602	10.002096	9.997904	30	30
31	45	8.991623	11.008377	8.993722	11.006278	10.002099	9.997901	15	29
32	38	8.991943	11.008057	8.994045	11.005955	10.002103	9.997897	22	28
33	15	8.992263	11.007737	8.994369	11.005631	10.002106	9.997894	45	27
34	30	8.992583	11.007417	8.994691	11.005309	10.002109	9.997891	30	26
35	45	8.992902	11.007098	8.995014	11.004986	10.002112	9.997888	15	25
36	39	8.993222	11.006778	8.995337	11.004663	10.002115	9.997885	21	24
37	15	8.993541	11.006459	8.995659	11.004341	10.002118	9.997882	45	23
38	30	8.993860	11.006140	8.995981	11.004019	10.002121	9.997879	30	22
39	45	8.994178	11.005822	8.996303	11.003697	10.002124	9.997876	15	21
40	40	8.994497	11.005503	8.996624	11.003376	10.002128	9.997872	20	20
41	15	8.994815	11.005185	8.996946	11.003054	10.002131	9.997869	45	19
42	30	8.995133	11.004867	8.997267	11.002733	10.002134	9.997866	30	18
43	45	8.995451	11.004549	8.997587	11.002413	10.002137	9.997863	15	17
44	41	8.995768	11.004232	8.997908	11.002092	10.002140	9.997860	19	16
45	15	8.996085	11.003915	8.998228	11.001772	10.002143	9.997857	45	15
46	30	8.996402	11.003598	8.998549	11.001451	10.002146	9.997854	30	14
47	45	8.996719	11.003281	8.998869	11.001131	10.002150	9.997850	15	13
48	42	8.997036	11.002964	8.999188	11.000812	10.002153	9.997847	18	12
49	15	8.997352	11.002648	8.999508	11.000492	10.002156	9.997844	45	11
50	30	8.997668	11.002332	8.999827	11.000173	10.002159	9.997841	30	10
51	45	8.997984	11.002016	9.000146	10.999854	10.002162	9.997838	15	9
52	43	8.998299	11.001701	9.000465	10.999535	10.002165	9.997835	17	8
53	15	8.998615	11.001385	9.000783	10.999217	10.002169	9.997831	45	7
54	30	8.998930	11.001070	9.001102	10.998898	10.002172	9.997828	30	6
55	45	8.999245	11.000755	9.001420	10.998580	10.002175	9.997825	15	5
56	44	8.999559	11.000441	9.001737	10.998261	10.002178	9.997822	16	4
57	15	8.999874	11.000126	9.002055	10.997945	10.002181	9.997819	45	3
58	30	9.000188	10.999812	9.002372	10.997628	10.002184	9.997816	30	2
59	45	9.000502	10.999498	9.002690	10.997310	10.002188	9.997812	15	1
60	45	9.000816	10.999184	9.003007	10.996993	10.002191	9.997809	15	0
min.	"	sine	cosine	tangent	cotangent	secant	cosec.	"	sec.
0° 27'.		LOG. SINES, &c.						84 deg.	

0° 23'		LOG. SINES, &c. (1)						5 deg.	
sec	'	sine.	coscant.	tangent.	cotangent.	secant.	cosec.	'	sec.
0	45	9.000816	10.999184	9.003007	10.996993	10.002181	9.997809	15	60
1	15	9.001129	10.998871	9.003323	10.996677	10.002194	9.997786	45	59
2	30	9.001443	10.998557	9.003640	10.996360	10.002197	9.997763	30	58
3	45	9.001756	10.998244	9.003956	10.996044	10.002200	9.997740	15	57
4	46	9.002069	10.997931	9.004272	10.995728	10.002203	9.997717	14	56
5	15	9.002381	10.997619	9.004588	10.995412	10.002207	9.997793	45	55
6	30	9.002694	10.997306	9.004903	10.995097	10.002210	9.997770	30	54
7	45	9.003006	10.996994	9.005219	10.994781	10.002213	9.997747	15	53
8	47	9.003318	10.996682	9.005534	10.994466	10.002216	9.997724	13	52
9	15	9.003630	10.996370	9.005849	10.994151	10.002219	9.997701	45	51
10	30	9.003941	10.996059	9.006164	10.993836	10.002223	9.997777	30	50
11	45	9.004252	10.995748	9.006478	10.993522	10.002226	9.997754	15	49
12	48	9.004563	10.995437	9.006792	10.993208	10.002229	9.997731	12	48
13	15	9.004874	10.995126	9.007106	10.992894	10.002232	9.997708	45	47
14	30	9.005185	10.994815	9.007420	10.992580	10.002235	9.997765	30	46
15	45	9.005495	10.994505	9.007734	10.992266	10.002239	9.997761	15	45
16	49	9.005805	10.994195	9.008047	10.991953	10.002242	9.997758	11	44
17	15	9.006115	10.993885	9.008360	10.991640	10.002245	9.997755	45	43
18	30	9.006425	10.993575	9.008673	10.991327	10.002248	9.997752	30	42
19	45	9.006734	10.993266	9.008986	10.991014	10.002252	9.997748	15	41
20	50	9.007044	10.992956	9.009298	10.990702	10.002255	9.997745	10	40
21	15	9.007353	10.992647	9.009611	10.990389	10.002258	9.997742	45	39
22	30	9.007661	10.992339	9.009923	10.990077	10.002261	9.997739	30	38
23	45	9.007970	10.992030	9.010234	10.989766	10.002264	9.997736	15	37
24	51	9.008278	10.991722	9.010546	10.989454	10.002268	9.997732	9	36
25	15	9.008586	10.991414	9.010857	10.989143	10.002271	9.997729	45	35
26	30	9.008894	10.991106	9.011169	10.988831	10.002274	9.997726	30	34
27	45	9.009202	10.990798	9.011479	10.988521	10.002277	9.997723	15	33
28	52	9.009510	10.990490	9.011790	10.988210	10.002281	9.997719	8	32
29	15	9.009817	10.990183	9.012101	10.987899	10.002284	9.997716	45	31
30	30	9.010124	10.989876	9.012411	10.987589	10.002287	9.997713	30	30
31	45	9.010431	10.989569	9.012721	10.987279	10.002290	9.997710	15	29
32	53	9.010737	10.989263	9.013031	10.986969	10.002294	9.997706	7	28
33	15	9.011044	10.988956	9.013341	10.986659	10.002297	9.997703	45	27
34	30	9.011350	10.988650	9.013650	10.986350	10.002300	9.997700	30	26
35	45	9.011656	10.988344	9.013959	10.986041	10.002303	9.997697	15	25
36	54	9.011962	10.988038	9.014268	10.985732	10.002307	9.997693	6	24
37	15	9.012267	10.987733	9.014577	10.985423	10.002310	9.997690	45	23
38	30	9.012572	10.987428	9.014886	10.985114	10.002313	9.997687	30	22
39	45	9.012877	10.987123	9.015194	10.984806	10.002317	9.997683	15	21
40	55	9.013182	10.986818	9.015502	10.984498	10.002320	9.997680	5	20
41	15	9.013487	10.986513	9.015810	10.984190	10.002323	9.997677	45	19
42	30	9.013791	10.986209	9.016118	10.983882	10.002326	9.997674	30	18
43	45	9.014096	10.985904	9.016425	10.983575	10.002330	9.997670	15	17
44	56	9.014400	10.985600	9.016732	10.983268	10.002333	9.997667	4	16
45	15	9.014703	10.985297	9.017039	10.982961	10.002336	9.997664	45	15
46	30	9.015007	10.984993	9.017346	10.982654	10.002339	9.997661	30	14
47	45	9.015310	10.984690	9.017653	10.982347	10.002343	9.997657	15	13
48	57	9.015613	10.984387	9.017959	10.982041	10.002346	9.997654	3	12
49	15	9.015916	10.984084	9.018266	10.981734	10.002349	9.997651	45	11
50	30	9.016219	10.983781	9.018572	10.981428	10.002353	9.997647	30	10
51	45	9.016522	10.983478	9.018877	10.981123	10.002356	9.997644	15	9
52	58	9.016824	10.983176	9.019183	10.980817	10.002359	9.997641	2	8
53	15	9.017126	10.982874	9.019489	10.980512	10.002363	9.997637	45	7
54	30	9.017428	10.982572	9.019794	10.980206	10.002366	9.997634	30	6
55	45	9.017729	10.982271	9.020099	10.979901	10.002369	9.997631	15	5
56	59	9.018031	10.981969	9.020404	10.979597	10.002372	9.997628	1	4
57	15	9.018332	10.981668	9.020708	10.979292	10.002376	9.997624	45	3
58	30	9.018633	10.981367	9.021012	10.978988	10.002379	9.997621	30	2
59	45	9.018934	10.981066	9.021316	10.978684	10.002382	9.997618	15	1
60	60	9.019235	10.980765	9.021620	10.978380	10.002386	9.997614	0	0
sec	'	sine.	coscant.	tangent.	cotangent.	secant.	cosec.	'	sec.
5° 36'		LOG SINES, &c.						84 deg.	

0° 24"		LOG. SINES, &c. (L.)						6 deg.	
deg.	'	sine.	cosine.	tangent.	cotangent.	secant.	cosec.	'	sec.
0	0	9.019235	10.980765	9.021620	10.978380	10.002386	9.997614	60	60
1	15	9.019535	10.980465	9.021924	10.978076	10.002389	9.997611	45	59
2	30	9.019835	10.980165	9.022227	10.977773	10.002392	9.997608	30	■
3	45	9.020135	10.979865	9.022531	10.977469	10.002396	9.997604	15	57
4	1	9.020435	10.979565	9.022834	10.977166	10.002399	9.997601	59	56
5	15	9.020734	10.979265	9.023137	10.976863	10.002402	9.997598	45	55
6	30	9.021034	10.978966	9.023439	10.976561	10.002406	9.997594	30	54
7	45	9.021333	10.978667	9.023742	10.976258	10.002409	9.997591	15	53
8	2	9.021632	10.978368	9.024044	10.975956	10.002412	9.997588	58	52
9	15	9.021930	10.978070	9.024346	10.975654	10.002416	9.997584	45	51
10	30	9.022229	10.977771	9.024648	10.975352	10.002419	9.997581	30	50
11	45	9.022527	10.977473	9.024950	10.975050	10.002422	9.997578	15	49
12	3	9.022825	10.977175	9.025251	10.974749	10.002426	9.997574	57	■
13	15	9.023123	10.976877	9.025552	10.974448	10.002429	9.997571	45	47
14	30	9.023421	10.976579	9.025853	10.974147	10.002432	9.997568	30	46
15	45	9.023718	10.976282	9.026154	10.973846	10.002436	9.997564	15	45
16	4	9.024016	10.975984	9.026455	10.973545	10.002439	9.997561	56	44
17	15	9.024313	10.975687	9.026755	10.973245	10.002442	9.997558	45	43
18	30	9.024610	10.975390	9.027055	10.972945	10.002446	9.997554	30	42
19	45	9.024906	10.975094	9.027355	10.972645	10.002449	9.997551	15	41
20	5	9.025203	10.974797	9.027655	10.972345	10.002453	9.997547	55	40
21	■	9.025499	10.974501	9.027955	10.972045	10.002456	9.997544	45	39
22	30	9.025795	10.974205	9.028254	10.971746	10.002459	9.997541	30	38
23	45	9.026091	10.973909	9.028553	10.971447	10.002463	9.997537	15	37
24	6	9.026386	10.973614	9.028852	10.971148	10.002466	9.997534	54	36
25	15	9.026682	10.973318	9.029151	10.970849	10.002469	9.997531	45	35
26	30	9.026977	10.973023	9.029450	10.970550	10.002473	9.997527	30	34
27	45	9.027272	10.972728	9.029748	10.970252	10.002476	9.997524	15	33
28	7	9.027567	10.972433	9.030046	10.969954	10.002480	9.997520	53	32
29	15	9.027862	10.972138	9.030344	10.969656	10.002483	9.997517	45	31
30	30	9.028156	10.971844	9.030642	10.969358	10.002486	9.997514	■	30
31	45	9.028450	10.971550	9.030940	10.969060	10.002490	9.997510	15	29
32	8	9.028744	10.971256	9.031237	10.968763	10.002493	9.997507	52	28
33	15	9.029038	10.970962	9.031534	10.968466	10.002497	9.997503	45	27
34	30	9.029332	10.970668	9.031831	10.968169	10.002500	9.997500	30	26
35	45	9.029625	10.970375	9.032128	10.967872	10.002503	9.997497	15	25
36	9	9.029918	10.970082	9.032425	10.967575	10.002507	9.997493	51	24
37	15	9.030211	10.969789	9.032721	10.967279	10.002510	9.997490	45	23
38	■	9.030504	10.969496	9.033017	10.966983	10.002514	9.997486	30	22
39	■	9.030797	10.969203	9.033313	10.966687	10.002517	9.997483	15	21
40	10	9.031089	10.968911	9.033609	10.966391	10.002520	9.997480	50	■
41	15	9.031381	10.968618	9.033905	10.966095	10.002524	9.997476	45	19
42	30	9.031673	10.968325	9.034200	10.965800	10.002527	9.997473	30	18
43	45	9.031965	10.968035	9.034496	10.965504	10.002531	9.997469	15	17
44	11	9.032257	10.967743	9.034791	10.965209	10.002534	9.997466	49	16
45	15	9.032548	10.967452	9.035085	10.964915	10.002537	9.997463	45	15
46	30	9.032839	10.967161	9.035380	10.964620	10.002541	9.997459	30	14
47	45	9.033130	10.966870	9.035675	10.964325	10.002544	9.997456	15	13
48	12	9.033421	10.966579	9.035969	10.964031	10.002548	9.997452	48	12
49	15	9.033712	10.966288	9.036263	10.963737	10.002551	9.997449	45	11
50	30	9.034002	10.965998	9.036557	10.963443	10.002555	9.997445	30	10
51	45	9.034292	10.965708	9.036850	10.963150	10.002558	9.997442	15	■
52	13	9.034582	10.965418	9.037144	10.962856	10.002561	9.997439	47	8
■	15	9.034872	10.965128	9.037437	10.962563	10.002565	9.997435	45	7
54	30	9.035162	10.964838	9.037730	10.962270	10.002568	9.997432	■	6
55	45	9.035451	10.964549	9.038023	10.961977	10.002572	9.997428	15	5
56	14	9.035741	10.964259	9.038316	10.961684	10.002575	9.997425	46	4
57	15	9.036030	10.963970	9.038608	10.961392	10.002579	9.997421	45	■
58	30	9.036319	10.963681	9.038901	10.961100	10.002582	9.997418	■	■
59	45	9.036607	10.963393	9.039193	10.960807	10.002586	9.997414	15	1
60	15	9.036896	10.963104	9.039485	10.960515	10.002589	9.997411	45	0
sec.	'	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	'	sec.
5° 35"		LOG. SINES, &c.						83 deg.	

0° 25'		LOG. SINES, &c. (L.)						6 deg.	
sec.	min.	sine.	coscant.	tangent.	cotangent.	secant.	cosec.	sec.	min.
0	15	9.036896	10.963104	9.039485	10.960515	10.002589	9.997411	45	60
1	15	9.037184	10.962816	9.039776	10.960224	10.002593	9.997407	45	59
2	30	9.037472	10.962528	9.040068	10.959932	10.002596	9.997404	30	58
3	45	9.037760	10.962240	9.040359	10.959641	10.002599	9.997401	15	57
4	16	9.038048	10.961952	9.040651	10.959349	10.002603	9.997397	44	56
5	15	9.038335	10.961665	9.040942	10.959058	10.002606	9.997394	45	55
6	30	9.038623	10.961377	9.041232	10.958768	10.002610	9.997390	30	54
7	45	9.038910	10.961090	9.041523	10.958477	10.002613	9.997387	15	53
8	17	9.039197	10.960803	9.041813	10.958187	10.002617	9.997383	43	52
9	15	9.039483	10.960517	9.042104	10.957896	10.002620	9.997380	45	51
10	30	9.039770	10.960230	9.042394	10.957606	10.002624	9.997376	30	50
11	45	9.040056	10.959944	9.042683	10.957317	10.002627	9.997373	15	49
12	18	9.040342	10.959658	9.042973	10.957027	10.002631	9.997369	42	48
13	15	9.040628	10.959372	9.043263	10.956737	10.002634	9.997366	45	47
14	30	9.040914	10.959086	9.043552	10.956448	10.002638	9.997362	30	46
15	45	9.041200	10.958800	9.043841	10.956159	10.002641	9.997359	15	45
16	19	9.041485	10.958515	9.044130	10.955870	10.002645	9.997355	41	44
17	15	9.041770	10.958230	9.044419	10.955581	10.002648	9.997352	45	43
18	30	9.042055	10.957945	9.044707	10.955293	10.002652	9.997348	30	42
19	45	9.042340	10.957660	9.044995	10.955005	10.002655	9.997345	15	41
20	20	9.042625	10.957375	9.045284	10.954716	10.002659	9.997341	40	40
21	15	9.042909	10.957091	9.045572	10.954428	10.002662	9.997338	45	39
22	30	9.043194	10.956806	9.045859	10.954141	10.002666	9.997334	30	38
23	45	9.043478	10.956522	9.046147	10.953853	10.002669	9.997331	15	37
24	21	9.043762	10.956238	9.046434	10.953566	10.002673	9.997327	39	36
25	15	9.044045	10.955955	9.046722	10.953278	10.002676	9.997324	45	35
26	30	9.044329	10.955671	9.047009	10.952991	10.002680	9.997320	30	34
27	45	9.044612	10.955388	9.047295	10.952705	10.002683	9.997317	15	33
28	22	9.044895	10.955105	9.047582	10.952418	10.002687	9.997313	■	32
29	15	9.045178	10.954822	9.047869	10.952131	10.002690	9.997310	45	31
30	30	9.045461	10.954539	9.048155	10.951845	10.002694	9.997306	30	30
31	45	9.045744	10.954256	9.048441	10.951559	10.002697	9.997303	15	29
32	23	9.046026	10.953974	9.048727	10.951273	10.002701	9.997299	37	28
33	■	9.046308	10.953692	9.049013	10.950987	10.002704	9.997296	45	27
34	30	9.046590	10.953410	9.049298	10.950702	10.002708	9.997292	30	26
■	45	9.046872	10.953128	9.049584	10.950416	10.002712	9.997288	■	■
36	24	9.047154	10.952846	9.049869	10.950131	10.002715	9.997285	36	24
37	15	9.047435	10.952565	9.050154	10.949846	10.002719	9.997281	45	23
38	■	9.047717	10.952283	9.050439	10.949561	10.002722	9.997278	30	22
39	45	9.047998	10.952002	9.050723	10.949277	10.002726	9.997274	15	21
40	25	9.048279	10.951721	9.051008	10.948992	10.002729	9.997271	35	20
41	15	9.048559	10.951441	9.051292	10.948708	10.002733	9.997267	45	19
42	30	9.048840	10.951160	9.051576	10.948424	10.002736	9.997264	30	18
43	45	9.049120	10.950880	9.051860	10.948140	10.002740	9.997260	15	17
44	26	9.049400	10.950600	9.052144	10.947856	10.002743	9.997257	34	16
45	15	9.049680	10.950320	9.052427	10.947573	10.002747	9.997253	45	15
46	30	9.049960	10.950040	9.052711	10.947289	10.002751	9.997249	30	14
47	45	9.050240	10.949760	9.052994	10.947006	10.002754	9.997246	15	13
48	27	9.050519	10.949481	9.053277	10.946723	10.002758	9.997242	33	12
49	15	9.050799	10.949201	9.053560	10.946440	10.002761	9.997239	45	11
50	30	9.051078	10.948922	9.053843	10.946157	10.002765	9.997235	30	10
51	45	9.051357	10.948643	9.054125	10.945875	10.002768	9.997232	15	■
52	28	9.051635	10.948365	9.054407	10.945593	10.002772	9.997228	32	8
53	15	9.051914	10.948086	9.054689	10.945311	10.002776	9.997224	45	7
54	30	9.052192	10.947808	9.054971	10.945029	10.002779	9.997221	30	6
55	45	9.052470	10.947530	9.055253	10.944747	10.002783	9.997217	15	5
56	29	9.052748	10.947252	9.055535	10.944465	10.002786	9.997214	31	4
57	15	9.053026	10.946974	9.055816	10.944184	10.002790	9.997210	45	3
58	30	9.053304	10.946696	9.056097	10.943903	10.002794	9.997206	30	2
59	45	9.053581	10.946419	9.056379	10.943621	10.002797	9.997203	15	1
60	30	9.053859	10.946141	9.056659	10.943341	10.002801	9.997199	30	0
sec.	min.	sine.	coscant.	tangent.	cotangent.	secant.	cosec.	sec.	min.
54° 34'		LOG. SINES, &c.						53 deg.	

0° 26'		LOG. SINES, &c. (1.)						6 deg.	
min.	sec.	sine.	cosine.	tangent.	cotangent.	secant.	cosec.	min.	sec.
0	30	9.053859	10.946141	9.056659	10.943341	10.002801	9.997199	30	60
1	15	9.054136	10.945864	9.056940	10.943060	10.002804	9.997196	45	59
2	30	9.054413	10.945587	9.057221	10.942779	10.002808	9.997192	30	58
3	45	9.054689	10.945311	9.057501	10.942499	10.002812	9.997188	15	57
4	31	9.054966	10.945034	9.057781	10.942219	10.002815	9.997185	29	56
5	15	9.055242	10.944758	9.058061	10.941939	10.002819	9.997181	45	55
6	30	9.055519	10.944481	9.058341	10.941659	10.002822	9.997178	30	54
7	45	9.055795	10.944205	9.058621	10.941379	10.002826	9.997174	15	53
8	32	9.056071	10.943929	9.058900	10.941100	10.002830	9.997170	28	52
9	15	9.056346	10.943654	9.059179	10.940821	10.002833	9.997167	45	51
10	30	9.056622	10.943378	9.059459	10.940541	10.002837	9.997163	30	50
11	45	9.056897	10.943103	9.059738	10.940262	10.002840	9.997160	15	49
12	33	9.057172	10.942828	9.060016	10.939984	10.002844	9.997156	27	48
13	15	9.057447	10.942553	9.060295	10.939705	10.002848	9.997152	45	47
14	30	9.057722	10.942278	9.060573	10.939427	10.002851	9.997149	30	46
15	45	9.057997	10.942003	9.060852	10.939148	10.002855	9.997145	15	45
16	34	9.058271	10.941729	9.061130	10.938870	10.002859	9.997141	26	44
17	15	9.058545	10.941455	9.061408	10.938592	10.002862	9.997138	45	43
18	30	9.058819	10.941181	9.061685	10.938315	10.002866	9.997134	30	42
19	45	9.059093	10.940907	9.061963	10.938037	10.002870	9.997130	15	41
20	35	9.059367	10.940633	9.062240	10.937760	10.002873	9.997127	25	40
21	15	9.059641	10.940359	9.062518	10.937482	10.002877	9.997123	45	39
22	30	9.059914	10.940086	9.062795	10.937205	10.002880	9.997120	30	38
23	45	9.060187	10.939813	9.063071	10.936929	10.002884	9.997116	15	37
24	36	9.060460	10.939540	9.063348	10.936652	10.002888	9.997112	24	36
25	15	9.060733	10.939267	9.063625	10.936375	10.002891	9.997109	45	35
26	30	9.061006	10.938994	9.063901	10.936099	10.002895	9.997105	30	34
27	45	9.061278	10.938722	9.064177	10.935823	10.002899	9.997101	15	33
28	37	9.061551	10.938449	9.064453	10.935547	10.002902	9.997098	23	32
29	15	9.061823	10.938177	9.064729	10.935271	10.002906	9.997094	45	31
30	30	9.062095	10.937905	9.065005	10.934995	10.002910	9.997090	30	30
31	45	9.062367	10.937633	9.065280	10.934720	10.002913	9.997087	15	29
32	38	9.062639	10.937361	9.065556	10.934444	10.002917	9.997083	22	28
33	15	9.062910	10.937090	9.065831	10.934169	10.002921	9.997079	45	27
34	30	9.063181	10.936819	9.066106	10.933894	10.002924	9.997076	30	26
35	45	9.063452	10.936548	9.066381	10.933619	10.002928	9.997072	15	25
36	39	9.063723	10.936277	9.066655	10.933345	10.002932	9.997068	21	24
37	15	9.063994	10.936006	9.066930	10.933070	10.002936	9.997064	45	23
38	30	9.064265	10.935735	9.067204	10.932796	10.002939	9.997061	30	22
39	45	9.064535	10.935465	9.067478	10.932522	10.002943	9.997057	15	21
40	40	9.064806	10.935194	9.067752	10.932248	10.002947	9.997053	20	20
41	15	9.065076	10.934924	9.068026	10.931974	10.002950	9.997050	45	19
42	30	9.065346	10.934654	9.068300	10.931700	10.002954	9.997046	30	18
43	45	9.065616	10.934384	9.068573	10.931427	10.002958	9.997042	15	17
44	41	9.065885	10.934115	9.068846	10.931154	10.002961	9.997039	19	16
45	15	9.066155	10.933845	9.069120	10.930880	10.002965	9.997035	45	15
46	30	9.066424	10.933576	9.069393	10.930607	10.002969	9.997031	30	14
47	45	9.066693	10.933307	9.069665	10.930335	10.002972	9.997028	15	13
48	42	9.066962	10.933038	9.069938	10.930062	10.002976	9.997024	18	12
49	15	9.067231	10.932769	9.070210	10.929790	10.002980	9.997020	45	11
50	30	9.067499	10.932501	9.070483	10.929517	10.002984	9.997016	30	10
51	45	9.067768	10.932232	9.070755	10.929245	10.002987	9.997013	15	9
52	43	9.068036	10.931964	9.071027	10.928973	10.002991	9.997009	17	8
53	15	9.068304	10.931696	9.071299	10.928701	10.002995	9.997005	45	7
54	30	9.068572	10.931428	9.071570	10.928430	10.002998	9.997002	30	6
55	45	9.068840	10.931160	9.071842	10.928158	10.003002	9.996998	15	5
56	44	9.069107	10.930893	9.072113	10.927887	10.003006	9.996994	16	4
57	15	9.069375	10.930625	9.072384	10.927616	10.003010	9.996990	45	3
58	30	9.069642	10.930358	9.072655	10.927345	10.003013	9.996987	30	2
59	45	9.069909	10.930091	9.072926	10.927074	10.003017	9.996983	15	1
60	45	9.070176	10.929824	9.073197	10.926803	10.003021	9.996979	15	0
min.	sec.	sine.	cosine.	tangent.	cotangent.	secant.	cosec.	min.	sec.
5° 33'		LOG. SINES, &c.						63 deg.	

0° 27'		LOG. SINES, &c. (1.)						6 deg.	
sec.	min.	sine.	cosine.	tangent.	cotangent.	secant.	cosec.	sec.	min.
0	45	9.070176	10.929824	9.073197	10.926803	10.003021	9.996979	15	40
1	15	9.070443	10.929557	9.073467	10.926533	10.003025	9.996975	46	39
2	30	9.070709	10.929291	9.073738	10.926262	10.003028	9.996972	30	38
3	45	9.070976	10.929024	9.074008	10.925992	10.003032	9.996968	15	37
4	46	9.071242	10.928758	9.074278	10.925722	10.003036	9.996964	14	36
5	15	9.071508	10.928492	9.074548	10.925452	10.003040	9.996960	45	35
6	30	9.071774	10.928226	9.074817	10.925183	10.003043	9.996957	30	34
7	45	9.072040	10.927960	9.075087	10.924913	10.003047	9.996953	15	33
8	47	9.072305	10.927695	9.075356	10.924644	10.003051	9.996949	13	32
9	15	9.072571	10.927429	9.075625	10.924375	10.003055	9.996945	45	31
10	30	9.072836	10.927164	9.075894	10.924106	10.003058	9.996942	30	30
11	45	9.073101	10.926899	9.076163	10.923837	10.003062	9.996938	15	29
12	48	9.073366	10.926634	9.076432	10.923568	10.003066	9.996934	12	28
13	15	9.073631	10.926369	9.076701	10.923299	10.003070	9.996930	45	27
14	30	9.073896	10.926104	9.076969	10.923031	10.003073	9.996927	30	26
15	45	9.074160	10.925840	9.077237	10.922763	10.003077	9.996923	15	25
16	49	9.074424	10.925576	9.077505	10.922495	10.003081	9.996919	11	24
17	15	9.074688	10.925312	9.077773	10.922227	10.003085	9.996915	45	23
18	30	9.074952	10.925048	9.078041	10.921959	10.003089	9.996911	30	22
19	45	9.075216	10.924784	9.078308	10.921692	10.003092	9.996908	15	21
20	50	9.075480	10.924520	9.078576	10.921424	10.003096	9.996904	10	20
21	15	9.075743	10.924257	9.078843	10.921157	10.003100	9.996900	45	19
22	30	9.076007	10.923993	9.079110	10.920890	10.003104	9.996896	30	18
23	45	9.076270	10.923730	9.079377	10.920623	10.003107	9.996893	15	17
24	51	9.076533	10.923467	9.079644	10.920356	10.003111	9.996889	9	16
25	15	9.076796	10.923204	9.079911	10.920089	10.003115	9.996885	45	15
26	30	9.077058	10.922942	9.080177	10.919823	10.003119	9.996881	30	14
27	45	9.077321	10.922679	9.080443	10.919557	10.003123	9.996877	15	13
28	52	9.077583	10.922417	9.080710	10.919290	10.003126	9.996874	8	12
29	15	9.077845	10.922155	9.080976	10.919024	10.003130	9.996870	45	11
30	30	9.078107	10.921893	9.081241	10.918759	10.003134	9.996866	30	10
31	45	9.078369	10.921631	9.081507	10.918493	10.003138	9.996862	15	9
32	53	9.078631	10.921369	9.081773	10.918227	10.003142	9.996858	7	8
33	15	9.078892	10.921108	9.082038	10.917962	10.003145	9.996855	45	7
34	30	9.079154	10.920846	9.082303	10.917697	10.003149	9.996851	30	6
35	45	9.079415	10.920585	9.082568	10.917432	10.003153	9.996847	15	5
36	54	9.079676	10.920324	9.082833	10.917167	10.003157	9.996843	6	4
37	15	9.079937	10.920063	9.083098	10.916902	10.003161	9.996839	45	3
38	30	9.080198	10.919802	9.083362	10.916638	10.003165	9.996835	30	2
39	45	9.080458	10.919542	9.083627	10.916373	10.003168	9.996832	15	1
40	55	9.080719	10.919281	9.083891	10.916109	10.003172	9.996828	5	0
41	15	9.080979	10.919021	9.084155	10.915845	10.003176	9.996824	45	19
42	30	9.081239	10.918761	9.084419	10.915581	10.003180	9.996820	30	18
43	45	9.081499	10.918501	9.084683	10.915317	10.003184	9.996816	15	17
44	56	9.081759	10.918241	9.084947	10.915053	10.003188	9.996812	4	16
45	15	9.082019	10.917981	9.085210	10.914790	10.003191	9.996809	45	15
46	30	9.082278	10.917722	9.085473	10.914527	10.003195	9.996805	30	14
47	45	9.082537	10.917463	9.085736	10.914264	10.003199	9.996801	15	13
48	57	9.082797	10.917203	9.086000	10.914000	10.003203	9.996797	3	12
49	15	9.083056	10.916944	9.086262	10.913738	10.003207	9.996793	45	11
50	30	9.083314	10.916686	9.086525	10.913475	10.003211	9.996789	30	10
51	45	9.083573	10.916427	9.086788	10.913212	10.003215	9.996785	15	9
52	58	9.083832	10.916168	9.087050	10.912950	10.003218	9.996782	2	8
53	15	9.084090	10.915910	9.087312	10.912688	10.003222	9.996778	45	7
54	30	9.084349	10.915652	9.087574	10.912426	10.003226	9.996774	30	6
55	45	9.084606	10.915394	9.087836	10.912164	10.003230	9.996770	15	5
56	59	9.084864	10.915136	9.088098	10.911902	10.003234	9.996766	1	4
57	15	9.085122	10.914878	9.088360	10.911640	10.003238	9.996762	45	3
58	30	9.085380	10.914620	9.088621	10.911379	10.003242	9.996758	30	2
59	46	9.085637	10.914363	9.088883	10.911117	10.003245	9.996755	15	1
60	60	9.085894	10.914106	9.089144	10.910856	10.003249	9.996751	0	0
sec.	min.	sine.	cosine.	tangent.	cotangent.	secant.	cosec.	sec.	min.
5° 32'		LOG. SINES, &c.						53 deg.	

0° 28'		LOG. SINES, &c. (L)						1 deg.		
deg.	'	sin.	coscant.	tangent.	cotangent.	secant.	cosec.	'	sec.	sec.
0	0	9.085894	10.914106	9.080144	10.910856	10.003249	9.996761	60	60	
1	15	9.086152	10.913848	9.080405	10.910595	10.003253	9.996747	45	59	
2	30	9.086409	10.913591	9.080666	10.910334	10.003257	9.996743	30	58	
3	45	9.086665	10.913335	9.080926	10.910074	10.003261	9.996739	15	57	
4	1	9.086922	10.913078	9.081187	10.909813	10.003265	9.996735	59	56	
5	15	9.087179	10.912821	9.081447	10.909553	10.003269	9.996731	45	55	
6	30	9.087435	10.912565	9.081708	10.909292	10.003273	9.996727	30	54	
7	45	9.087691	10.912309	9.081968	10.909032	10.003277	9.996723	15	53	
8	2	9.087947	10.912053	9.082228	10.908772	10.003280	9.996720	58	52	
9	15	9.088203	10.911797	9.082487	10.908513	10.003284	9.996716	45	51	
10	30	9.088459	10.911541	9.082747	10.908253	10.003288	9.996712	30	50	
11	45	9.088715	10.911285	9.083007	10.907993	10.003292	9.996708	15	49	
12	3	9.088970	10.911030	9.083266	10.907734	10.003296	9.996704	57	48	
13	15	9.089225	10.910775	9.083525	10.907475	10.003300	9.996700	45	47	
14	30	9.089480	10.910520	9.083784	10.907216	10.003304	9.996696	30	46	
15	45	9.089735	10.910265	9.084043	10.906957	10.003308	9.996692	15	45	
16	4	9.089990	10.910010	9.084302	10.906698	10.003312	9.996688	56	44	
17	15	9.090245	10.909755	9.084561	10.906439	10.003316	9.996684	45	43	
18	30	9.090500	10.909500	9.084819	10.906181	10.003320	9.996680	30	42	
19	45	9.090754	10.909246	9.085077	10.905923	10.003323	9.996677	15	41	
20	5	9.091008	10.908992	9.085335	10.905665	10.003327	9.996673	55	40	
21	15	9.091263	10.908738	9.085593	10.905407	10.003331	9.996669	45	39	
22	30	9.091516	10.908484	9.085851	10.905149	10.003335	9.996665	30	38	
23	45	9.091770	10.908230	9.086109	10.904891	10.003339	9.996661	15	37	
24	6	9.092024	10.907976	9.086367	10.904633	10.003343	9.996657	54	36	
25	15	9.092277	10.907723	9.086624	10.904376	10.003347	9.996653	45	35	
26	30	9.092530	10.907470	9.086881	10.904119	10.003351	9.996649	30	34	
27	45	9.092784	10.907216	9.087138	10.903862	10.003355	9.996645	15	33	
28	7	9.093037	10.906963	9.087395	10.903605	10.003359	9.996641	53	32	
29	15	9.093290	10.906710	9.087652	10.903348	10.003363	9.996637	45	31	
30	30	9.093542	10.906458	9.087909	10.903091	10.003367	9.996633	30	30	
31	45	9.093795	10.906205	9.088165	10.902835	10.003371	9.996629	15	29	
32	8	9.094047	10.905953	9.088422	10.902578	10.003375	9.996625	52	28	
33	15	9.094300	10.905700	9.088678	10.902322	10.003379	9.996621	45	27	
34	30	9.094552	10.905448	9.088934	10.902066	10.003383	9.996617	30	26	
35	45	9.094804	10.905196	9.089190	10.901810	10.003386	9.996614	15	25	
36	9	9.095056	10.904944	9.089446	10.901554	10.003390	9.996610	51	24	
37	15	9.095307	10.904693	9.089702	10.901298	10.003394	9.996606	45	23	
38	30	9.095559	10.904441	9.089957	10.901043	10.003398	9.996602	30	22	
39	45	9.095810	10.904190	9.090213	10.900787	10.003402	9.996598	15	21	
40	10	9.096061	10.903939	9.090468	10.900532	10.003406	9.996594	50	20	
41	15	9.096313	10.903687	9.090723	10.900277	10.003410	9.996590	45	19	
42	30	9.096564	10.903436	9.090978	10.900022	10.003414	9.996586	30	18	
43	45	9.096814	10.903185	9.091233	10.899767	10.003418	9.996582	15	17	
44	11	9.097065	10.902935	9.091487	10.899513	10.003422	9.996578	49	16	
45	15	9.097316	10.902684	9.091742	10.899258	10.003426	9.996574	45	15	
46	30	9.097566	10.902434	9.091996	10.899004	10.003430	9.996570	30	14	
47	45	9.097816	10.902184	9.092250	10.898750	10.003434	9.996566	15	13	
48	12	9.098066	10.901934	9.092504	10.898496	10.003438	9.996562	48	12	
49	15	9.098316	10.901684	9.092758	10.898242	10.003442	9.996558	45	11	
50	30	9.098566	10.901434	9.093012	10.897988	10.003446	9.996554	30	10	
51	45	9.098816	10.901184	9.093266	10.897734	10.003450	9.996550	15	9	
52	13	9.099065	10.900935	9.093519	10.897481	10.003454	9.996546	47	8	
53	15	9.099314	10.900686	9.093772	10.897228	10.003458	9.996542	45	7	
54	30	9.099564	10.900436	9.094026	10.896974	10.003462	9.996538	30	6	
55	45	9.099813	10.900187	9.094279	10.896721	10.003466	9.996534	15	5	
56	14	9.10002	10.899938	9.094532	10.896468	10.003470	9.996530	46	4	
57	15	9.100270	10.899690	9.094784	10.896216	10.003474	9.996526	45	3	
58	30	9.100519	10.899441	9.095037	10.895963	10.003478	9.996522	30	2	
59	45	9.100767	10.899193	9.095290	10.895710	10.003482	9.996518	15	1	
60	15	9.101015	10.898944	9.095542	10.895458	10.003486	9.996514	45	0	
deg.	'	sin.	secant.	cotangent.	tangent.	coscant.	cosec.	'	sec.	sec.
5° 31'		LOG. SINES, &c.						52 deg.		

0° 29'.		LOG. SINES, &c. (1)						7 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosec.	"	sec.
0	15	9.101056	10.898944	9.104542	10.895458	10.003486	9.996514	45	60
1	15	9.101304	10.898696	9.104794	10.895206	10.003490	9.996510	45	59
2	30	9.101552	10.898448	9.105046	10.894954	10.003494	9.996506	30	58
3	45	9.101800	10.898200	9.105298	10.894702	10.003498	9.996502	15	57
4	16	9.102048	10.897952	9.105550	10.894450	10.003502	9.996498	44	56
5	15	9.102295	10.897705	9.105802	10.894198	10.003506	9.996494	45	55
6	30	9.102543	10.897457	9.106053	10.893947	10.003510	9.996490	30	54
7	45	9.102790	10.897210	9.106304	10.893696	10.003514	9.996486	15	53
8	17	9.103037	10.896963	9.106556	10.893444	10.003518	9.996482	43	52
9	15	9.103284	10.896716	9.106807	10.893193	10.003522	9.996478	45	51
10	30	9.103531	10.896469	9.107058	10.892942	10.003527	9.996473	30	50
11	45	9.103778	10.896222	9.107308	10.892692	10.003531	9.996469	15	49
12	18	9.104025	10.895975	9.107559	10.892441	10.003535	9.996465	42	48
13	15	9.104271	10.895729	9.107810	10.892190	10.003539	9.996461	45	47
14	30	9.104517	10.895483	9.108060	10.891940	10.003543	9.996457	30	46
15	45	9.104764	10.895236	9.108310	10.891690	10.003547	9.996453	15	45
16	19	9.105010	10.894990	9.108560	10.891440	10.003551	9.996449	41	44
17	15	9.105255	10.894745	9.108810	10.891190	10.003555	9.996445	45	43
18	30	9.105501	10.894499	9.109060	10.890940	10.003559	9.996441	30	42
19	45	9.105747	10.894253	9.109310	10.890690	10.003563	9.996437	15	41
20	20	9.105992	10.894008	9.109559	10.890441	10.003567	9.996433	40	40
21	15	9.106238	10.893762	9.109809	10.890191	10.003571	9.996429	45	39
22	30	9.106483	10.893517	9.110058	10.889942	10.003575	9.996425	30	38
23	45	9.106728	10.893272	9.110307	10.889693	10.003579	9.996421	15	37
24	21	9.106973	10.893027	9.110556	10.889444	10.003583	9.996417	39	36
25	15	9.107218	10.892782	9.110805	10.889195	10.003587	9.996413	45	35
26	30	9.107462	10.892538	9.111054	10.888946	10.003591	9.996409	30	34
27	45	9.107707	10.892293	9.111302	10.888698	10.003595	9.996404	15	33
28	22	9.107951	10.892049	9.111551	10.888449	10.003600	9.996400	38	32
29	15	9.108195	10.891805	9.111799	10.888201	10.003604	9.996396	45	31
30	30	9.108439	10.891561	9.112047	10.887953	10.003608	9.996392	30	30
31	45	9.108683	10.891317	9.112295	10.887705	10.003612	9.996388	15	29
32	23	9.108927	10.891073	9.112543	10.887457	10.003616	9.996384	37	28
33	15	9.109171	10.890829	9.112791	10.887209	10.003620	9.996380	45	27
34	30	9.109414	10.890586	9.113038	10.886962	10.003624	9.996376	30	26
35	45	9.109658	10.890342	9.113286	10.886714	10.003628	9.996372	15	25
36	24	9.109901	10.890099	9.113533	10.886467	10.003632	9.996368	36	24
37	15	9.110144	10.889856	9.113780	10.886220	10.003636	9.996364	45	23
38	30	9.110387	10.889613	9.114028	10.885972	10.003641	9.996359	30	22
39	45	9.110630	10.889370	9.114274	10.885726	10.003645	9.996355	15	21
40	25	9.110873	10.889127	9.114521	10.885479	10.003649	9.996351	35	20
41	15	9.111115	10.888885	9.114768	10.885232	10.003653	9.996347	45	19
42	30	9.111358	10.888642	9.115014	10.884986	10.003657	9.996343	30	18
43	45	9.111600	10.888400	9.115261	10.884739	10.003661	9.996339	15	17
44	26	9.111842	10.888158	9.115507	10.884493	10.003665	9.996335	34	16
45	15	9.112084	10.887916	9.115753	10.884247	10.003669	9.996331	45	15
46	30	9.112326	10.887674	9.115999	10.884001	10.003673	9.996326	30	14
47	45	9.112568	10.887432	9.116245	10.883755	10.003677	9.996322	15	13
48	27	9.112809	10.887191	9.116491	10.883509	10.003682	9.996318	33	12
49	15	9.113051	10.886949	9.116736	10.883264	10.003686	9.996314	45	11
50	30	9.113292	10.886708	9.116982	10.883018	10.003690	9.996310	30	10
51	45	9.113533	10.886467	9.117227	10.882773	10.003694	9.996306	15	9
52	28	9.113774	10.886226	9.117472	10.882528	10.003698	9.996302	32	8
53	15	9.114015	10.885985	9.117717	10.882283	10.003702	9.996298	45	7
54	30	9.114256	10.885744	9.117962	10.882038	10.003707	9.996293	30	6
55	45	9.114496	10.885504	9.118207	10.881793	10.003711	9.996289	15	5
56	29	9.114737	10.885263	9.118452	10.881548	10.003715	9.996285	31	4
57	15	9.114977	10.885023	9.118696	10.881304	10.003719	9.996281	45	3
58	30	9.115218	10.884782	9.118941	10.881059	10.003723	9.996277	30	2
59	45	9.115458	10.884542	9.119185	10.880815	10.003727	9.996273	15	1
60	30	9.115698	10.884302	9.119429	10.880571	10.003731	9.996269	30	0
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosec.	"	sec.
5° 30'.		LOG. SINES, &c.						82 deg.	

0° 30'.		LOG. SINES, &c. (L.)						7 deg.	
sec.	min.	sin.	cosecant	tan.	cotangent	secant	cosecant	min.	sec.
0	30	9.115698	10.884302	9.119429	10.880571	10.003731	9.996269	30	60
1	15	9.115937	10.884063	9.119673	10.880327	10.003736	9.996264	45	50
2	30	9.116177	10.883823	9.119917	10.880083	10.003740	9.996260	30	56
3	45	9.116417	10.883583	9.120161	10.879839	10.003744	9.996256	15	57
4	31	9.116656	10.883344	9.120404	10.879596	10.003749	9.996252	29	56
5	15	9.116895	10.883105	9.120648	10.879352	10.003752	9.996248	45	55
6	30	9.117135	10.882865	9.120891	10.879109	10.003756	9.996244	30	54
7	45	9.117374	10.882626	9.121134	10.878866	10.003761	9.996239	15	53
8	32	9.117612	10.882388	9.121377	10.878623	10.003765	9.996235	28	52
9	15	9.117851	10.882149	9.121620	10.878380	10.003769	9.996231	45	51
10	30	9.118090	10.881910	9.121863	10.878137	10.003773	9.996227	30	50
11	45	9.118328	10.881672	9.122106	10.877894	10.003777	9.996223	15	49
12	33	9.118567	10.881433	9.122348	10.877652	10.003782	9.996218	27	48
13	15	9.118805	10.881195	9.122591	10.877409	10.003786	9.996214	45	47
14	30	9.119043	10.880957	9.122833	10.877167	10.003790	9.996210	30	46
15	45	9.119281	10.880719	9.123075	10.876925	10.003794	9.996206	15	45
16	34	9.119519	10.880481	9.123317	10.876683	10.003798	9.996202	26	44
17	15	9.119756	10.880244	9.123559	10.876441	10.003803	9.996197	45	43
18	30	9.119994	10.880006	9.123801	10.876199	10.003807	9.996193	30	42
19	45	9.120231	10.879769	9.124042	10.875958	10.003811	9.996189	15	41
20	35	9.120469	10.879531	9.124284	10.875716	10.003815	9.996185	25	40
21	15	9.120706	10.879294	9.124525	10.875475	10.003819	9.996181	45	39
22	30	9.120943	10.879057	9.124766	10.875234	10.003824	9.996176	30	38
23	45	9.121180	10.878820	9.125008	10.874992	10.003828	9.996172	15	37
24	36	9.121417	10.878583	9.125249	10.874751	10.003832	9.996168	24	36
25	15	9.121653	10.878347	9.125489	10.874511	10.003836	9.996164	45	35
26	30	9.121890	10.878110	9.125730	10.874270	10.003840	9.996160	30	34
27	45	9.122126	10.877874	9.125971	10.874029	10.003845	9.996155	15	33
28	37	9.122362	10.877638	9.126211	10.873789	10.003849	9.996151	23	32
29	15	9.122598	10.877402	9.126451	10.873549	10.003853	9.996147	45	31
30	30	9.122834	10.877166	9.126692	10.873308	10.003857	9.996143	30	30
31	45	9.123070	10.876930	9.126932	10.873068	10.003862	9.996138	15	29
32	38	9.123306	10.876694	9.127172	10.872828	10.003866	9.996134	22	28
33	15	9.123542	10.876458	9.127412	10.872588	10.003870	9.996130	45	27
34	30	9.123777	10.876223	9.127651	10.872349	10.003874	9.996126	30	26
35	45	9.124012	10.875988	9.127891	10.872109	10.003878	9.996122	15	25
36	39	9.124248	10.875752	9.128130	10.871870	10.003883	9.996117	21	24
37	15	9.124483	10.875517	9.128370	10.871630	10.003887	9.996113	45	23
38	30	9.124718	10.875282	9.128609	10.871391	10.003891	9.996109	30	22
39	45	9.124952	10.875048	9.128848	10.871152	10.003895	9.996105	15	21
40	40	9.125187	10.874813	9.129087	10.870913	10.003900	9.996100	20	20
41	15	9.125422	10.874578	9.129326	10.870674	10.003904	9.996096	45	19
42	30	9.125656	10.874344	9.129564	10.870436	10.003908	9.996092	30	18
43	45	9.125890	10.874110	9.129803	10.870197	10.003912	9.996088	15	17
44	41	9.126125	10.873875	9.130041	10.869959	10.003917	9.996083	19	16
45	15	9.126359	10.873641	9.130280	10.869720	10.003921	9.996079	45	15
46	30	9.126593	10.873407	9.130518	10.869482	10.003925	9.996075	30	14
47	45	9.126826	10.873174	9.130756	10.869244	10.003929	9.996071	15	13
48	42	9.127060	10.872940	9.130994	10.869006	10.003934	9.996066	18	12
49	15	9.127294	10.872706	9.131231	10.868769	10.003938	9.996062	45	11
50	30	9.127527	10.872473	9.131469	10.868531	10.003942	9.996058	30	10
51	45	9.127760	10.872240	9.131707	10.868293	10.003947	9.996053	15	9
52	43	9.127993	10.872007	9.131944	10.868056	10.003951	9.996049	17	8
53	15	9.128226	10.871774	9.132181	10.867819	10.003955	9.996045	45	7
54	30	9.128459	10.871541	9.132419	10.867581	10.003959	9.996041	30	6
55	45	9.128692	10.871308	9.132656	10.867344	10.003964	9.996036	15	5
56	44	9.128925	10.871075	9.132893	10.867107	10.003968	9.996032	16	4
57	15	9.129157	10.870843	9.133129	10.866871	10.003972	9.996028	45	3
58	30	9.129390	10.870610	9.133366	10.866634	10.003977	9.996023	30	2
59	45	9.129622	10.870378	9.133603	10.866397	10.003981	9.996019	15	1
60	45	9.129854	10.870146	9.133839	10.866161	10.003985	9.996015	15	0
sec.	min.	sin.	cosecant	tan.	cotangent	secant	cosecant	min.	sec.
5° 29'.		LOG. SINES, &c						52 deg.	

0° 31'.		LOG. SINES, &c. (t)						7 deg.	
sec.	"	sin.	coscant.	tangent.	cotangent.	secant.	cosec.	"	sec.
0	45	9.129854	10.870146	9.133839	10.866161	10.003985	9.996015	15	60
1	15	9.130086	10.869914	9.134075	10.866161	10.003989	9.996011	15	59
2	30	9.130318	10.869682	9.134311	10.865689	10.003994	9.996006	30	58
3	45	9.130550	10.869450	9.134548	10.865452	10.003998	9.996002	15	57
4	46	9.130781	10.869219	9.134783	10.865217	10.004002	9.995998	14	56
5	15	9.131013	10.868987	9.135019	10.865000	10.004007	9.995993	45	55
6	30	9.131244	10.868756	9.135255	10.864745	10.004011	9.995989	30	54
7	45	9.131475	10.868525	9.135491	10.864509	10.004015	9.995985	15	53
8	47	9.131706	10.868294	9.135726	10.864274	10.004020	9.995980	13	52
9	15	9.131937	10.868063	9.135961	10.864039	10.004024	9.995976	45	51
10	30	9.132168	10.867832	9.136196	10.863804	10.004028	9.995972	30	50
11	45	9.132399	10.867601	9.136432	10.863568	10.004033	9.995967	15	49
12	48	9.132630	10.867370	9.136666	10.863334	10.004037	9.995963	12	48
13	15	9.132860	10.867140	9.136901	10.863099	10.004041	9.995959	45	47
14	30	9.133091	10.866909	9.137136	10.862864	10.004046	9.995954	30	46
15	45	9.133322	10.866679	9.137371	10.862629	10.004050	9.995950	15	45
16	49	9.133551	10.866449	9.137605	10.862395	10.004054	9.995946	11	44
17	15	9.133781	10.866219	9.137839	10.862161	10.004059	9.995941	45	43
18	30	9.134011	10.865989	9.138074	10.861926	10.004063	9.995937	30	42
19	45	9.134241	10.865759	9.138308	10.861692	10.004067	9.995933	15	41
20	50	9.134470	10.865530	9.138542	10.861458	10.004072	9.995928	10	40
21	15	9.134700	10.865300	9.138776	10.861224	10.004076	9.995924	45	39
22	30	9.134929	10.865071	9.139009	10.860991	10.004080	9.995920	30	38
23	45	9.135158	10.864842	9.139243	10.860757	10.004085	9.995915	15	37
24	51	9.135387	10.864613	9.139476	10.860524	10.004089	9.995911	9	36
25	15	9.135616	10.864384	9.139710	10.860290	10.004093	9.995907	45	35
26	30	9.135845	10.864155	9.139943	10.860057	10.004098	9.995902	30	34
27	45	9.136074	10.863926	9.140176	10.859824	10.004102	9.995898	15	33
28	52	9.136303	10.863697	9.140409	10.859591	10.004106	9.995894	8	32
29	15	9.136531	10.863469	9.140642	10.859358	10.004111	9.995889	45	31
30	30	9.136760	10.863240	9.140875	10.859125	10.004115	9.995885	30	30
31	45	9.136988	10.863012	9.141107	10.858893	10.004120	9.995880	15	29
32	53	9.137216	10.862784	9.141340	10.858660	10.004124	9.995876	7	28
33	15	9.137444	10.862556	9.141572	10.858428	10.004128	9.995872	45	27
34	30	9.137672	10.862328	9.141805	10.858195	10.004133	9.995867	30	26
35	45	9.137900	10.862100	9.142037	10.857963	10.004137	9.995863	15	25
36	54	9.138127	10.861873	9.142269	10.857731	10.004141	9.995859	6	24
37	15	9.138355	10.861645	9.142501	10.857499	10.004146	9.995854	45	23
38	30	9.138582	10.861418	9.142733	10.857267	10.004150	9.995850	30	22
39	45	9.138810	10.861190	9.142964	10.857036	10.004155	9.995845	15	21
40	55	9.139037	10.860963	9.143196	10.856804	10.004159	9.995841	5	20
41	15	9.139264	10.860736	9.143427	10.856573	10.004163	9.995837	45	19
42	30	9.139491	10.860509	9.143659	10.856341	10.004168	9.995832	30	18
43	45	9.139718	10.860282	9.143890	10.856110	10.004172	9.995828	15	17
44	56	9.139944	10.860056	9.144121	10.855879	10.004177	9.995823	4	16
45	15	9.140171	10.859829	9.144352	10.855648	10.004181	9.995819	45	15
46	30	9.140397	10.859602	9.144583	10.855417	10.004185	9.995815	30	14
47	45	9.140624	10.859376	9.144814	10.855186	10.004190	9.995810	15	13
48	57	9.140850	10.859150	9.145044	10.854956	10.004194	9.995806	3	12
49	15	9.141076	10.858924	9.145275	10.854725	10.004199	9.995801	45	11
50	30	9.141302	10.858698	9.145505	10.854495	10.004203	9.995797	30	10
51	45	9.141528	10.858472	9.145735	10.854265	10.004207	9.995793	15	9
52	58	9.141754	10.858246	9.145965	10.854035	10.004212	9.995788	2	8
53	15	9.141979	10.858021	9.146195	10.853805	10.004216	9.995784	45	7
54	30	9.142205	10.857795	9.146425	10.853575	10.004221	9.995779	30	6
55	45	9.142430	10.857570	9.146655	10.853345	10.004225	9.995775	15	5
56	59	9.142655	10.857345	9.146885	10.853115	10.004230	9.995770	1	4
57	15	9.142881	10.857119	9.147114	10.852886	10.004234	9.995766	45	3
58	30	9.143106	10.856894	9.147344	10.852656	10.004238	9.995762	30	2
59	45	9.143330	10.856670	9.147573	10.852427	10.004243	9.995757	15	1
60	60	9.143555	10.856445	9.147802	10.852198	10.004247	9.995753	0	0
sec.	"	sin.	coscant.	tangent.	cotangent.	secant.	cosec.	"	sec.
5° 28'.		LOG. SINES, &c.						82 deg.	

0° 32'		LOG. SINES, &c. (t.)						8 deg.	
sec.	min.	sine.	coscant.	tangent.	cotangent.	secant.	cosec.	sec.	min.
0	0	9.143555	10.856445	9.147802	10.852198	10.004247	9.995753	60	60
1	15	9.143780	10.856220	9.148032	10.851968	10.004252	9.995748	45	59
2	30	9.144004	10.855996	9.148261	10.851739	10.004256	9.995744	30	58
3	45	9.144229	10.855771	9.148489	10.851511	10.004261	9.995739	15	57
4	1	9.144453	10.855547	9.148718	10.851282	10.004265	9.995735	59	56
5	15	9.144677	10.855323	9.148947	10.851053	10.004269	9.995731	45	55
6	30	9.144901	10.855099	9.149175	10.850825	10.004274	9.995726	30	54
7	45	9.145125	10.854875	9.149404	10.850596	10.004278	9.995722	15	53
8	2	9.145349	10.854651	9.149632	10.850368	10.004283	9.995717	58	52
9	15	9.145573	10.854427	9.149860	10.850140	10.004287	9.995713	45	51
10	30	9.145797	10.854203	9.150088	10.849912	10.004292	9.995708	30	50
11	45	9.146020	10.853980	9.150316	10.849684	10.004296	9.995704	15	49
12	3	9.146243	10.853757	9.150544	10.849456	10.004301	9.995699	57	48
13	15	9.146467	10.853533	9.150772	10.849228	10.004305	9.995695	45	47
14	30	9.146690	10.853310	9.150999	10.849001	10.004310	9.995690	30	46
15	45	9.146913	10.853087	9.151227	10.848773	10.004314	9.995686	15	45
16	4	9.147136	10.852864	9.151454	10.848546	10.004319	9.995681	56	44
17	15	9.147359	10.852641	9.151682	10.848318	10.004323	9.995677	45	43
18	30	9.147581	10.852419	9.151909	10.848091	10.004328	9.995672	30	42
19	45	9.147804	10.852196	9.152136	10.847864	10.004332	9.995668	15	41
20	5	9.148026	10.851974	9.152363	10.847637	10.004337	9.995663	55	40
21	15	9.148248	10.851752	9.152589	10.847411	10.004341	9.995659	45	39
22	30	9.148471	10.851529	9.152816	10.847184	10.004345	9.995655	30	38
23	45	9.148693	10.851307	9.153043	10.846957	10.004350	9.995650	15	37
24	6	9.148915	10.851085	9.153269	10.846731	10.004354	9.995646	54	36
25	15	9.149137	10.850863	9.153496	10.846504	10.004359	9.995641	45	35
26	30	9.149358	10.850642	9.153722	10.846278	10.004363	9.995637	30	34
27	45	9.149580	10.850420	9.153948	10.846052	10.004368	9.995632	15	33
28	7	9.149801	10.850199	9.154174	10.845826	10.004372	9.995628	53	32
29	15	9.150023	10.849977	9.154400	10.845600	10.004377	9.995623	45	31
30	30	9.150244	10.849756	9.154626	10.845374	10.004381	9.995619	30	30
31	45	9.150465	10.849535	9.154851	10.845149	10.004386	9.995614	15	29
32	8	9.150686	10.849314	9.155077	10.844923	10.004391	9.995609	52	28
33	15	9.150907	10.849093	9.155302	10.844698	10.004395	9.995605	45	27
34	30	9.151128	10.848872	9.155528	10.844472	10.004400	9.995600	30	26
35	45	9.151349	10.848651	9.155753	10.844247	10.004404	9.995596	15	25
36	9	9.151569	10.848431	9.155978	10.844022	10.004409	9.995591	51	24
37	15	9.151790	10.848210	9.156203	10.843797	10.004413	9.995587	45	23
38	30	9.152010	10.847990	9.156428	10.843572	10.004418	9.995582	30	22
39	45	9.152230	10.847770	9.156653	10.843347	10.004422	9.995578	15	21
40	10	9.152451	10.847549	9.156877	10.843123	10.004427	9.995573	50	20
41	15	9.152671	10.847329	9.157102	10.842898	10.004431	9.995569	45	19
42	30	9.152891	10.847109	9.157326	10.842674	10.004436	9.995564	30	18
43	45	9.153110	10.846890	9.157551	10.842449	10.004440	9.995560	15	17
44	11	9.153330	10.846670	9.157775	10.842225	10.004445	9.995555	49	16
45	15	9.153550	10.846450	9.157999	10.842001	10.004449	9.995551	45	15
46	30	9.153769	10.846231	9.158223	10.841777	10.004454	9.995546	30	14
47	45	9.153988	10.846012	9.158447	10.841553	10.004458	9.995542	15	13
48	12	9.154208	10.845792	9.158671	10.841329	10.004463	9.995537	48	12
49	15	9.154427	10.845573	9.158894	10.841106	10.004468	9.995532	45	11
50	30	9.154646	10.845354	9.159118	10.840882	10.004472	9.995528	30	10
51	45	9.154865	10.845135	9.159341	10.840659	10.004477	9.995523	15	9
52	13	9.155083	10.844917	9.159565	10.840435	10.004481	9.995519	47	8
53	15	9.155302	10.844699	9.159788	10.840212	10.004486	9.995514	45	7
54	30	9.155521	10.844479	9.160011	10.839989	10.004490	9.995510	30	6
55	45	9.155739	10.844261	9.160234	10.839766	10.004495	9.995505	15	5
56	14	9.155957	10.844043	9.160457	10.839543	10.004500	9.995500	46	4
57	15	9.156176	10.843824	9.160680	10.839320	10.004504	9.995496	45	3
58	30	9.156394	10.843606	9.160902	10.839097	10.004509	9.995491	30	2
59	45	9.156612	10.843388	9.161125	10.838875	10.004513	9.995487	15	1
60	15	9.156830	10.843170	9.161347	10.838653	10.004518	9.995482	45	0
sec.	min.	sine.	coscant.	tangent.	cotangent.	secant.	cosec.	sec.	min.
50° 32'		LOG. SINES, &c.						81 deg.	

0° 33'		LOG. SINES, &c. (1)						3 deg.	
sec.	sin.	coscant.	tangent.	cotangent.	secant.	cosec.	sec.	sin.	sec.
0	15	9.155830	10.843170	9.161347	10.838653	10.004518	9.995482	45	60
1	15	9.157047	10.842953	9.161570	10.838430	10.004522	9.995478	45	59
2	30	9.157265	10.842735	9.161792	10.838208	10.004527	9.995473	45	58
3	45	9.157482	10.842518	9.162014	10.837986	10.004532	9.995468	45	57
4	16	9.157700	10.842300	9.162236	10.837764	10.004536	9.995464	44	56
5	15	9.157917	10.842083	9.162458	10.837542	10.004541	9.995459	45	55
6	30	9.158134	10.841866	9.162680	10.837320	10.004545	9.995455	30	54
7	45	9.158352	10.841648	9.162901	10.837099	10.004550	9.995450	15	53
8	17	9.158569	10.841431	9.163123	10.836877	10.004555	9.995445	43	52
9	15	9.158785	10.841215	9.163344	10.836656	10.004559	9.995441	45	51
10	30	9.159002	10.840998	9.163566	10.836434	10.004564	9.995436	30	50
11	45	9.159219	10.840781	9.163787	10.836213	10.004568	9.995432	15	49
12	18	9.159435	10.840565	9.164008	10.835992	10.004573	9.995427	42	48
13	15	9.159652	10.840348	9.164229	10.835771	10.004578	9.995422	45	47
14	30	9.159868	10.840132	9.164450	10.835550	10.004582	9.995418	30	46
15	45	9.160084	10.839916	9.164671	10.835329	10.004587	9.995413	15	45
16	19	9.160300	10.839700	9.164892	10.835108	10.004591	9.995409	41	44
17	15	9.160516	10.839484	9.165112	10.834888	10.004596	9.995404	45	43
18	30	9.160732	10.839268	9.165333	10.834667	10.004601	9.995399	30	42
19	45	9.160948	10.839052	9.165553	10.834447	10.004605	9.995395	15	41
20	20	9.161164	10.838836	9.165774	10.834226	10.004610	9.995390	40	40
21	15	9.161379	10.838621	9.165994	10.834006	10.004614	9.995386	45	39
22	30	9.161595	10.838405	9.166214	10.833786	10.004619	9.995381	30	38
23	45	9.161810	10.838190	9.166434	10.833566	10.004624	9.995376	15	37
24	21	9.162025	10.837975	9.166654	10.833346	10.004628	9.995372	39	36
25	15	9.162241	10.837759	9.166873	10.833127	10.004633	9.995367	45	35
26	30	9.162456	10.837544	9.167093	10.832907	10.004638	9.995362	30	34
27	45	9.162670	10.837330	9.167313	10.832687	10.004642	9.995358	15	33
28	22	9.162885	10.837115	9.167532	10.832468	10.004647	9.995353	38	32
29	15	9.163100	10.836900	9.167751	10.832249	10.004652	9.995348	45	31
30	30	9.163315	10.836685	9.167971	10.832029	10.004656	9.995344	30	30
31	45	9.163529	10.836471	9.168190	10.831810	10.004661	9.995339	15	29
32	23	9.163743	10.836257	9.168409	10.831591	10.004666	9.995334	37	28
33	15	9.163958	10.836042	9.168628	10.831372	10.004670	9.995330	45	27
34	30	9.164172	10.835828	9.168847	10.831153	10.004675	9.995325	30	26
35	45	9.164386	10.835614	9.169065	10.830935	10.004680	9.995320	15	25
36	24	9.164600	10.835400	9.169284	10.830716	10.004684	9.995316	36	24
37	15	9.164814	10.835186	9.169502	10.830498	10.004689	9.995311	45	23
38	30	9.165027	10.834973	9.169721	10.830279	10.004694	9.995306	30	22
39	45	9.165241	10.834759	9.169939	10.830061	10.004698	9.995302	15	21
40	25	9.165454	10.834546	9.170157	10.829843	10.004703	9.995297	35	20
41	15	9.165668	10.834332	9.170375	10.829625	10.004708	9.995292	45	19
42	30	9.165881	10.834119	9.170593	10.829407	10.004712	9.995288	30	18
43	45	9.166094	10.833906	9.170811	10.829189	10.004717	9.995283	15	17
44	26	9.166307	10.833693	9.171029	10.828971	10.004722	9.995278	34	16
45	15	9.166520	10.833480	9.171246	10.828754	10.004726	9.995274	45	15
46	30	9.166733	10.833267	9.171464	10.828536	10.004731	9.995269	30	14
47	45	9.166946	10.833054	9.171681	10.828319	10.004736	9.995264	15	13
48	27	9.167159	10.832841	9.171899	10.828101	10.004740	9.995260	33	12
49	15	9.167371	10.832629	9.172116	10.827884	10.004745	9.995255	45	11
50	30	9.167584	10.832416	9.172333	10.827667	10.004750	9.995250	30	10
51	45	9.167796	10.832204	9.172550	10.827450	10.004754	9.995246	15	9
52	28	9.168008	10.831992	9.172767	10.827233	10.004759	9.995241	32	8
53	15	9.168220	10.831780	9.172984	10.827016	10.004764	9.995236	45	7
54	30	9.168432	10.831568	9.173201	10.826799	10.004769	9.995231	30	6
55	45	9.168644	10.831356	9.173417	10.826583	10.004773	9.995227	15	5
56	29	9.168856	10.831144	9.173634	10.826366	10.004778	9.995222	31	4
57	15	9.169068	10.830932	9.173850	10.826150	10.004783	9.995217	45	3
58	30	9.169279	10.830721	9.174066	10.825934	10.004787	9.995213	30	2
59	45	9.169491	10.830509	9.174283	10.825717	10.004792	9.995208	15	1
60	30	9.169702	10.830298	9.174499	10.825501	10.004797	9.995203	30	0
sec.	sin.	coscant.	cotangent.	tangent.	secant.	cosec.	sin.	sec.	sec.
5° 26'		LOG. SINES, &c.						31 deg.	

0° 34'.		LOG. SINES, &c. (t.)					8 deg.	
	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
30	9.169702	10.830298	9.174499	10.825501	10.004797	9.995203	30	60
15	9.169913	10.830087	9.174715	10.825285	10.004802	9.995198	45	59
30	9.170124	10.829876	9.174931	10.825069	10.004806	9.995194	30	58
45	9.170336	10.829664	9.175146	10.824854	10.004811	9.995189	15	57
31	9.170546	10.829454	9.175362	10.824638	10.004816	9.995184	29	56
15	9.170757	10.829243	9.175578	10.824422	10.004820	9.995180	45	55
30	9.170968	10.829032	9.175793	10.824207	10.004825	9.995175	30	54
45	9.171179	10.828821	9.176009	10.823991	10.004830	9.995170	15	53
32	9.171389	10.828611	9.176224	10.823776	10.004835	9.995165	28	52
15	9.171600	10.828400	9.176439	10.823561	10.004839	9.995161	45	51
30	9.171810	10.828190	9.176654	10.823346	10.004844	9.995156	30	50
45	9.172020	10.827980	9.176869	10.823131	10.004849	9.995151	15	49
33	9.172230	10.827770	9.177084	10.822916	10.004854	9.995146	27	48
15	9.172440	10.827560	9.177299	10.822701	10.004858	9.995142	45	47
30	9.172650	10.827350	9.177513	10.822487	10.004863	9.995137	30	46
45	9.172860	10.827140	9.177728	10.822272	10.004868	9.995132	15	45
34	9.173070	10.826930	9.177942	10.822058	10.004873	9.995127	26	44
15	9.173279	10.826721	9.178157	10.821843	10.004877	9.995123	45	43
30	9.173489	10.826511	9.178371	10.821629	10.004882	9.995118	30	42
45	9.173698	10.826302	9.178585	10.821415	10.004887	9.995113	15	41
35	9.173908	10.826092	9.178799	10.821201	10.004892	9.995108	25	40
15	9.174117	10.825883	9.179013	10.820987	10.004896	9.995104	45	39
30	9.174326	10.825674	9.179227	10.820773	10.004901	9.995099	30	38
45	9.174535	10.825465	9.179441	10.820559	10.004906	9.995094	15	37
36	9.174744	10.825256	9.179655	10.820345	10.004911	9.995089	24	36
15	9.174953	10.825047	9.179868	10.820132	10.004916	9.995084	45	35
30	9.175161	10.824839	9.180082	10.819918	10.004920	9.995080	30	34
45	9.175370	10.824630	9.180295	10.819705	10.004925	9.995075	15	33
37	9.175578	10.824422	9.180508	10.819492	10.004930	9.995070	23	32
15	9.175787	10.824213	9.180721	10.819279	10.004935	9.995065	45	31
30	9.175995	10.824005	9.180934	10.819066	10.004939	9.995061	30	30
45	9.176203	10.823797	9.181147	10.818853	10.004944	9.995056	15	29
38	9.176411	10.823589	9.181360	10.818640	10.004949	9.995051	22	28
15	9.176619	10.823381	9.181573	10.818427	10.004954	9.995046	45	27
30	9.176827	10.823173	9.181786	10.818214	10.004959	9.995041	30	26
45	9.177035	10.822965	9.181998	10.818002	10.004963	9.995037	15	25
39	9.177242	10.822758	9.182211	10.817789	10.004968	9.995032	21	24
15	9.177450	10.822550	9.182423	10.817577	10.004973	9.995027	45	23
30	9.177657	10.822343	9.182635	10.817365	10.004978	9.995022	30	22
45	9.177865	10.822135	9.182847	10.817153	10.004983	9.995017	15	21
40	9.178072	10.821928	9.183059	10.816941	10.004987	9.995013	20	20
15	9.178279	10.821721	9.183271	10.816729	10.004992	9.995008	45	19
30	9.178486	10.821514	9.183483	10.816517	10.004997	9.995003	30	18
45	9.178693	10.821307	9.183695	10.816305	10.005002	9.994998	15	17
41	9.178900	10.821100	9.183907	10.816093	10.005007	9.994993	19	16
15	9.179107	10.820893	9.184118	10.815882	10.005012	9.994988	45	15
30	9.179313	10.820687	9.184330	10.815670	10.005016	9.994984	30	14
45	9.179520	10.820480	9.184541	10.815459	10.005021	9.994979	15	13
42	9.179726	10.820274	9.184752	10.815248	10.005026	9.994974	18	12
15	9.179933	10.820067	9.184964	10.815036	10.005031	9.994969	45	11
30	9.180139	10.819861	9.185175	10.814825	10.005036	9.994964	30	10
45	9.180345	10.819655	9.185386	10.814614	10.005041	9.994959	15	9
43	9.180551	10.819449	9.185597	10.814403	10.005045	9.994955	17	8
15	9.180757	10.819243	9.185807	10.814193	10.005050	9.994950	45	7
30	9.180963	10.819037	9.186018	10.813982	10.005055	9.994945	30	6
45	9.181169	10.818831	9.186229	10.813771	10.005060	9.994940	15	5
44	9.181374	10.818626	9.186439	10.813561	10.005065	9.994935	16	4
15	9.181580	10.818420	9.186649	10.813351	10.005070	9.994930	45	3
30	9.181785	10.818215	9.186860	10.813140	10.005075	9.994925	30	2
45	9.181991	10.818009	9.187070	10.812930	10.005079	9.994921	15	1
45	9.182196	10.817804	9.187280	10.812720	10.005084	9.994916	15	0
	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
5° 25'.		LOG. SINES, &c.					81 deg.	

0° 35'.		LOG. SINES, &c. (1.)						8 deg.	
sec.	min.	sin.	cosine	tangent	cotangent	secant	cosec.	sec.	min.
0	45	9.182196	10.817804	9.187280	10.812720	10.005084	9.994916	15	60
1	15	9.182401	10.817599	9.187490	10.812510	10.005089	9.994911	46	59
2	30	9.182606	10.817394	9.187700	10.812300	10.005094	9.994906	30	58
3	45	9.182811	10.817189	9.187910	10.812090	10.005099	9.994901	15	57
4	46	9.183016	10.816984	9.188120	10.811880	10.005104	9.994896	14	56
5	15	9.183221	10.816779	9.188329	10.811671	10.005109	9.994891	45	55
6	30	9.183425	10.816575	9.188539	10.811461	10.005113	9.994887	30	54
7	45	9.183630	10.816370	9.188748	10.811252	10.005118	9.994882	15	53
8	47	9.183834	10.816166	9.188957	10.811043	10.005123	9.994877	13	52
9	15	9.184039	10.815961	9.189167	10.810833	10.005128	9.994872	45	51
10	30	9.184243	10.815757	9.189376	10.810624	10.005133	9.994867	30	50
11	45	9.184447	10.815553	9.189585	10.810415	10.005138	9.994862	15	49
12	48	9.184651	10.815349	9.189794	10.810206	10.005143	9.994857	12	48
13	15	9.184855	10.815145	9.190003	10.809997	10.005148	9.994852	45	47
14	30	9.185059	10.814941	9.190211	10.809789	10.005153	9.994847	30	46
15	45	9.185263	10.814737	9.190420	10.809580	10.005157	9.994843	15	45
16	49	9.185466	10.814534	9.190629	10.809371	10.005162	9.994838	11	44
17	15	9.185670	10.814330	9.190837	10.809163	10.005167	9.994833	45	43
18	30	9.185873	10.814127	9.191046	10.808954	10.005172	9.994828	30	42
19	45	9.186077	10.813923	9.191254	10.808746	10.005177	9.994823	15	41
20	50	9.186280	10.813720	9.191462	10.808538	10.005182	9.994818	10	40
21	15	9.186483	10.813517	9.191670	10.808330	10.005187	9.994813	45	39
22	30	9.186686	10.813314	9.191878	10.808122	10.005192	9.994808	30	38
23	45	9.186889	10.813111	9.192086	10.807914	10.005197	9.994803	15	37
24	51	9.187092	10.812908	9.192294	10.807706	10.005202	9.994798	9	36
25	15	9.187295	10.812705	9.192502	10.807498	10.005206	9.994794	45	35
26	30	9.187498	10.812502	9.192709	10.807291	10.005211	9.994789	30	34
27	45	9.187700	10.812300	9.192917	10.807083	10.005216	9.994784	15	33
28	52	9.187903	10.812097	9.193124	10.806876	10.005221	9.994779	8	32
29	15	9.188105	10.811895	9.193331	10.806669	10.005226	9.994774	45	31
30	30	9.188308	10.811692	9.193539	10.806461	10.005231	9.994769	30	30
31	45	9.188510	10.811490	9.193746	10.806254	10.005236	9.994764	15	29
32	53	9.188712	10.811288	9.193953	10.806047	10.005241	9.994759	7	28
33	15	9.188914	10.811086	9.194160	10.805840	10.005246	9.994754	45	27
34	30	9.189116	10.810884	9.194367	10.805633	10.005251	9.994749	30	26
35	45	9.189318	10.810682	9.194573	10.805427	10.005256	9.994744	15	25
36	54	9.189519	10.810481	9.194780	10.805220	10.005261	9.994739	6	24
37	15	9.189721	10.810279	9.194987	10.805013	10.005266	9.994734	45	23
38	30	9.189923	10.810077	9.195193	10.804807	10.005271	9.994729	30	22
39	45	9.190124	10.809876	9.195400	10.804600	10.005276	9.994724	15	21
40	55	9.190325	10.809675	9.195606	10.804394	10.005281	9.994719	5	20
41	15	9.190527	10.809473	9.195812	10.804189	10.005286	9.994714	45	19
42	30	9.190728	10.809272	9.196018	10.803982	10.005290	9.994710	30	18
43	45	9.190929	10.809071	9.196224	10.803776	10.005295	9.994705	15	17
44	56	9.191130	10.808870	9.196430	10.803570	10.005300	9.994700	4	16
45	15	9.191331	10.808669	9.196636	10.803364	10.005305	9.994695	45	15
46	30	9.191531	10.808469	9.196842	10.803158	10.005310	9.994690	30	14
47	45	9.191732	10.808268	9.197047	10.802953	10.005315	9.994685	15	13
48	57	9.191933	10.808067	9.197253	10.802747	10.005320	9.994680	3	12
49	15	9.192133	10.807867	9.197458	10.802542	10.005325	9.994675	45	11
50	30	9.192334	10.807666	9.197664	10.802336	10.005330	9.994670	30	10
51	45	9.192534	10.807466	9.197869	10.802131	10.005335	9.994665	15	9
52	58	9.192734	10.807266	9.198074	10.801926	10.005340	9.994660	2	8
53	15	9.192934	10.807066	9.198279	10.801721	10.005345	9.994655	45	7
54	30	9.193134	10.806866	9.198484	10.801516	10.005350	9.994650	30	6
55	45	9.193334	10.806666	9.198689	10.801311	10.005355	9.994645	15	5
56	59	9.193534	10.806466	9.198894	10.801107	10.005360	9.994640	1	4
57	15	9.193734	10.806266	9.199099	10.800901	10.005365	9.994635	45	3
58	30	9.193933	10.806067	9.199303	10.800697	10.005370	9.994630	30	2
59	45	9.194133	10.805867	9.199508	10.800492	10.005375	9.994625	15	1
60	60	9.194332	10.805668	9.199712	10.800288	10.005380	9.994620	0	0
sec.	min.	cosine	secant	cotangent	tangent	cosecant	sine	sec.	min.
5° 24'.		LOG. SINES, &c.						81 deg.	

0 ^h 36 ^m .		LOG. SINES, &c. (t.)					9 deg.	
"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	9.194332	10.805668	9.199712	10.800288	10.005380	9.994620	60	60
15	9.194532	10.805468	9.199917	10.800083	10.005385	9.994615	45	59
30	9.194731	10.805269	9.200121	10.799879	10.005390	9.994610	30	58
45	9.194930	10.805070	9.200325	10.799675	10.005395	9.994605	15	57
1	9.195129	10.804871	9.200529	10.799471	10.005400	9.994600	59	56
15	9.195328	10.804672	9.200733	10.799267	10.005405	9.994595	45	55
30	9.195527	10.804473	9.200937	10.799063	10.005410	9.994590	30	54
45	9.195726	10.804274	9.201141	10.798859	10.005415	9.994585	15	53
2	9.195925	10.804075	9.201345	10.798655	10.005420	9.994580	58	52
15	9.196123	10.803877	9.201548	10.798452	10.005425	9.994575	45	51
30	9.196322	10.803678	9.201752	10.798248	10.005430	9.994570	30	50
45	9.196520	10.803480	9.201955	10.798045	10.005435	9.994565	15	49
3	9.196719	10.803281	9.202159	10.797841	10.005440	9.994560	57	48
15	9.196917	10.803083	9.202362	10.797638	10.005445	9.994555	45	47
30	9.197115	10.802885	9.202565	10.797435	10.005450	9.994550	30	46
45	9.197313	10.802687	9.202768	10.797232	10.005455	9.994545	15	45
4	9.197511	10.802489	9.202971	10.797029	10.005460	9.994540	56	44
15	9.197709	10.802291	9.203174	10.796826	10.005466	9.994534	45	43
30	9.197907	10.802093	9.203377	10.796623	10.005471	9.994529	30	42
45	9.198104	10.801896	9.203580	10.796420	10.005476	9.994524	15	41
5	9.198302	10.801698	9.203782	10.796218	10.005481	9.994519	55	40
15	9.198499	10.801501	9.203985	10.796015	10.005486	9.994514	45	39
30	9.198697	10.801303	9.204187	10.795813	10.005491	9.994509	30	38
45	9.198894	10.801106	9.204390	10.795610	10.005496	9.994504	15	37
6	9.199091	10.800909	9.204592	10.795408	10.005501	9.994499	54	36
15	9.199288	10.800712	9.204794	10.795206	10.005506	9.994494	45	35
30	9.199485	10.800515	9.204996	10.795004	10.005511	9.994489	30	34
45	9.199682	10.800318	9.205198	10.794802	10.005516	9.994484	15	33
7	9.199879	10.800121	9.205400	10.794600	10.005521	9.994479	53	32
15	9.200076	10.799924	9.205602	10.794398	10.005526	9.994474	45	31
30	9.200273	10.799727	9.205804	10.794196	10.005531	9.994469	30	30
45	9.200469	10.799531	9.206006	10.793994	10.005536	9.994464	15	29
8	9.200666	10.799334	9.206207	10.793793	10.005541	9.994459	52	28
15	9.200862	10.799138	9.206409	10.793591	10.005546	9.994454	45	27
30	9.201059	10.798941	9.206610	10.793390	10.005552	9.994448	30	26
45	9.201255	10.798745	9.206811	10.793189	10.005557	9.994443	15	25
9	9.201451	10.798549	9.207013	10.792987	10.005562	9.994438	51	24
15	9.201647	10.798353	9.207214	10.792786	10.005567	9.994433	45	23
30	9.201843	10.798157	9.207415	10.792585	10.005572	9.994428	30	22
45	9.202039	10.797961	9.207616	10.792384	10.005577	9.994423	15	21
10	9.202234	10.797766	9.207816	10.792184	10.005582	9.994418	50	20
15	9.202430	10.797570	9.208017	10.791983	10.005587	9.994413	45	19
30	9.202626	10.797374	9.208218	10.791782	10.005592	9.994408	30	18
45	9.202821	10.797179	9.208419	10.791581	10.005597	9.994403	15	17
11	9.203017	10.796983	9.208619	10.791381	10.005603	9.994397	49	16
15	9.203212	10.796788	9.208819	10.791181	10.005608	9.994392	45	15
30	9.203407	10.796593	9.209020	10.790980	10.005613	9.994387	30	14
45	9.203602	10.796398	9.209220	10.790780	10.005618	9.994382	15	13
12	9.203797	10.796203	9.209420	10.790580	10.005623	9.994377	48	12
15	9.203992	10.796008	9.209620	10.790380	10.005628	9.994372	45	11
30	9.204187	10.795813	9.209820	10.790180	10.005633	9.994367	30	10
45	9.204382	10.795618	9.210020	10.789980	10.005638	9.994362	15	9
13	9.204577	10.795423	9.210220	10.789780	10.005643	9.994357	47	8
15	9.204771	10.795229	9.210420	10.789580	10.005649	9.994351	45	7
30	9.204966	10.795034	9.210619	10.789381	10.005654	9.994346	30	6
45	9.205160	10.794840	9.210819	10.789181	10.005659	9.994341	15	5
14	9.205354	10.794646	9.211018	10.788982	10.005664	9.994336	46	4
15	9.205549	10.794451	9.211218	10.788782	10.005669	9.994331	45	3
30	9.205743	10.794257	9.211417	10.788583	10.005674	9.994326	30	2
45	9.205937	10.794063	9.211616	10.788384	10.005679	9.994321	15	1
15	9.206131	10.793869	9.211815	10.788185	10.005684	9.994316	45	0
"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
5 ^h 23 ^m		LOG. SINES, &c.					80 deg.	

0° 37'.		LOG. SINES, &c. (t)						9 deg.	
sec.	"	sine.	cosine.	tangent	cotangent	versut.	comine.	"	"
0	15	9.206131	10.793869	9.211515	10.785185	10.005684	9.994316		45
1	15	9.206325	10.793675	9.212014	10.787986	10.005690	9.994310		45
2	30	9.206519	10.793481	9.212213	10.787787	10.005695	9.994305		30
3	45	9.206712	10.793288	9.212412	10.787588	10.005700	9.994300		15
4	16	9.206906	10.793094	9.212611	10.787389	10.005705	9.994295		44
5	15	9.207099	10.792901	9.212810	10.787190	10.005710	9.994290		45
6	30	9.207293	10.792707	9.213008	10.786992	10.005715	9.994285		30
7	45	9.207486	10.792514	9.213207	10.786793	10.005721	9.994279		15
8	17	9.207679	10.792321	9.213405	10.786595	10.005726	9.994274		43
9	15	9.207873	10.792127	9.213603	10.786397	10.005731	9.994269		45
10	30	9.208066	10.791934	9.213802	10.786198	10.005736	9.994264		30
11	45	9.208259	10.791741	9.214000	10.786000	10.005741	9.994259		15
12	18	9.208452	10.791548	9.214198	10.785802	10.005746	9.994254		42
13	15	9.208644	10.791355	9.214396	10.785604	10.005752	9.994248		45
14	30	9.208837	10.791163	9.214594	10.785406	10.005757	9.994243		30
15	45	9.209030	10.790970	9.214792	10.785208	10.005762	9.994238		15
16	19	9.209222	10.790778	9.214989	10.785011	10.005767	9.994233		41
17	15	9.209415	10.790585	9.215187	10.784813	10.005772	9.994228		45
18	30	9.209607	10.790393	9.215385	10.784615	10.005777	9.994223		30
19	45	9.209799	10.790201	9.215582	10.784418	10.005783	9.994217		15
20	20	9.209992	10.790008	9.215779	10.784221	10.005788	9.994212		40
21	15	9.210184	10.789816	9.215977	10.784023	10.005793	9.994207		45
22	30	9.210376	10.789624	9.216174	10.783826	10.005798	9.994202		30
23	45	9.210568	10.789432	9.216371	10.783629	10.005803	9.994197		15
24	21	9.210760	10.789240	9.216568	10.783432	10.005809	9.994191		39
25	15	9.210951	10.789049	9.216765	10.783235	10.005814	9.994186		45
26	30	9.211143	10.788857	9.216962	10.783038	10.005819	9.994181		30
27	45	9.211335	10.788665	9.217159	10.782841	10.005824	9.994176		15
28	22	9.211526	10.788474	9.217356	10.782644	10.005829	9.994171		38
29	15	9.211718	10.788282	9.217552	10.782448	10.005835	9.994165		45
30	30	9.211909	10.788091	9.217749	10.782251	10.005840	9.994160		30
31	45	9.212100	10.787900	9.217945	10.782055	10.005845	9.994155		15
32	23	9.212291	10.787709	9.218142	10.781859	10.005850	9.994150		37
33	15	9.212482	10.787518	9.218338	10.781662	10.005856	9.994144		45
34	30	9.212673	10.787327	9.218534	10.781466	10.005861	9.994139		30
35	45	9.212864	10.787136	9.218730	10.781270	10.005866	9.994134		15
36	24	9.213055	10.786945	9.218926	10.781074	10.005871	9.994129		36
37	15	9.213246	10.786754	9.219122	10.780878	10.005876	9.994124		45
38	30	9.213437	10.786563	9.219318	10.780682	10.005882	9.994118		30
39	45	9.213627	10.786373	9.219514	10.780486	10.005887	9.994113		15
40	25	9.213818	10.786182	9.219710	10.780290	10.005892	9.994108		35
41	15	9.214009	10.785992	9.219905	10.780095	10.005897	9.994103		45
42	30	9.214198	10.785802	9.220101	10.779899	10.005903	9.994097		30
43	45	9.214389	10.785611	9.220296	10.779704	10.005908	9.994092		15
44	26	9.214579	10.785421	9.220492	10.779508	10.005913	9.994087		34
45	15	9.214769	10.785231	9.220687	10.779313	10.005918	9.994082		45
46	30	9.214959	10.785041	9.220882	10.779118	10.005924	9.994076		30
47	45	9.215149	10.784851	9.221077	10.778923	10.005929	9.994071		15
48	27	9.215339	10.784662	9.221272	10.778728	10.005934	9.994066		33
49	15	9.215528	10.784472	9.221467	10.778533	10.005939	9.994061		45
50	30	9.215718	10.784282	9.221662	10.778338	10.005945	9.994055		30
51	45	9.215907	10.784093	9.221857	10.778143	10.005950	9.994050		15
52	28	9.216097	10.783903	9.222052	10.777948	10.005955	9.994045		32
53	15	9.216286	10.783714	9.222246	10.777754	10.005960	9.994040		45
54	30	9.216475	10.783525	9.222441	10.777559	10.005966	9.994034		30
55	45	9.216664	10.783336	9.222635	10.777365	10.005971	9.994029		15
56	29	9.216854	10.783146	9.222830	10.777170	10.005976	9.994024		31
57	15	9.217043	10.782957	9.223024	10.776976	10.005982	9.994018		45
58	30	9.217232	10.782768	9.223218	10.776782	10.005987	9.994013		30
59	45	9.217420	10.782580	9.223412	10.776588	10.005992	9.994008		15
60	30	9.217609	10.782391	9.223606	10.776394	10.005997	9.994003		30
sec.	"	cosine.	secant.	cotangent.	tangent.	versut.	sine.	"	"
5° 22'.		LOG. SINES, &c.						60 deg.	

0° 38'		LOG. SINES, &c (L.)						9 deg	
sec.	min.	sine	coscant	tangent	cotangent	secant	cosec.	sec.	min.
0	30	9.217609	10.782391	9.223606	10.776394	10.005997	9.994003	30	60
1	15	9.217798	10.782202	9.223800	10.776200	10.006003	9.993997	45	50
2	30	9.217986	10.782014	9.223994	10.776006	10.006008	9.993992	30	58
3	45	9.218175	10.781825	9.224188	10.775812	10.006013	9.993987	15	57
4	31	9.218363	10.781637	9.224382	10.775618	10.006019	9.993981	29	48
5	15	9.218552	10.781448	9.224576	10.775424	10.006024	9.993976	45	55
6	30	9.218740	10.781260	9.224769	10.775231	10.006029	9.993971	30	54
7	45	9.218928	10.781072	9.224963	10.775037	10.006034	9.993966	15	53
8	32	9.219116	10.780884	9.225156	10.774844	10.006040	9.993960	28	52
9	15	9.219304	10.780696	9.225349	10.774651	10.006045	9.993955	45	51
10	30	9.219492	10.780508	9.225543	10.774457	10.006050	9.993950	30	50
11	45	9.219680	10.780320	9.225736	10.774264	10.006056	9.993944	15	49
12	33	9.219868	10.780132	9.225929	10.774071	10.006061	9.993939	27	48
13	15	9.220056	10.779944	9.226122	10.773878	10.006066	9.993934	45	47
14	30	9.220243	10.779757	9.226315	10.773685	10.006072	9.993928	30	46
15	45	9.220431	10.779569	9.226508	10.773492	10.006077	9.993923	15	45
16	34	9.220618	10.779382	9.226700	10.773300	10.006082	9.993918	26	44
17	15	9.220805	10.779195	9.226893	10.773107	10.006088	9.993912	45	43
18	30	9.220993	10.779007	9.227086	10.772914	10.006093	9.993907	30	42
19	45	9.221180	10.778820	9.227278	10.772722	10.006098	9.993902	15	41
20	35	9.221367	10.778633	9.227471	10.772529	10.006104	9.993896	25	40
21	15	9.221554	10.778446	9.227663	10.772337	10.006109	9.993891	45	39
22	30	9.221741	10.778259	9.227855	10.772145	10.006114	9.993886	30	38
23	45	9.221928	10.778072	9.228047	10.771953	10.006120	9.993880	15	37
24	36	9.222115	10.777885	9.228239	10.771761	10.006125	9.993875	24	36
25	15	9.222301	10.777699	9.228431	10.771569	10.006130	9.993870	45	35
26	30	9.222488	10.777512	9.228623	10.771377	10.006136	9.993864	30	34
27	45	9.222674	10.777326	9.228815	10.771185	10.006141	9.993859	15	33
28	37	9.222861	10.777139	9.229007	10.770993	10.006146	9.993854	23	32
29	15	9.223047	10.776953	9.229199	10.770801	10.006152	9.993848	45	31
30	30	9.223234	10.776766	9.229390	10.770610	10.006157	9.993843	30	30
31	45	9.223420	10.776580	9.229582	10.770418	10.006162	9.993838	15	29
32	38	9.223606	10.776394	9.229773	10.770227	10.006168	9.993832	22	28
33	15	9.223792	10.776208	9.229965	10.770035	10.006173	9.993827	45	27
34	30	9.223978	10.776022	9.230156	10.769844	10.006178	9.993822	30	26
35	45	9.224164	10.775836	9.230347	10.769653	10.006184	9.993816	15	25
36	39	9.224349	10.775651	9.230539	10.769461	10.006189	9.993811	21	24
37	15	9.224535	10.775465	9.230730	10.769270	10.006195	9.993805	45	23
38	30	9.224721	10.775279	9.230921	10.769079	10.006200	9.993800	30	22
39	45	9.224906	10.775094	9.231112	10.768888	10.006205	9.993795	15	21
40	40	9.225092	10.774908	9.231302	10.768698	10.006211	9.993789	20	20
41	15	9.225277	10.774723	9.231493	10.768507	10.006216	9.993784	45	19
42	30	9.225462	10.774538	9.231684	10.768316	10.006221	9.993779	30	18
43	45	9.225648	10.774352	9.231874	10.768126	10.006227	9.993773	15	17
44	41	9.225833	10.774167	9.232065	10.767935	10.006232	9.993768	19	16
45	15	9.226018	10.773982	9.232255	10.767745	10.006238	9.993762	45	15
46	30	9.226203	10.773797	9.232446	10.767554	10.006243	9.993757	30	14
47	45	9.226388	10.773612	9.232636	10.767364	10.006248	9.993752	15	13
48	42	9.226572	10.773428	9.232826	10.767174	10.006254	9.993746	18	12
49	15	9.226757	10.773243	9.233016	10.766984	10.006259	9.993741	45	11
50	30	9.226942	10.773058	9.233206	10.766794	10.006265	9.993735	30	10
51	45	9.227126	10.772874	9.233396	10.766604	10.006270	9.993730	15	9
52	43	9.227311	10.772689	9.233586	10.766414	10.006275	9.993725	17	8
53	15	9.227495	10.772505	9.233776	10.766224	10.006281	9.993719	45	7
54	30	9.227680	10.772320	9.233966	10.766034	10.006286	9.993714	30	6
55	45	9.227864	10.772136	9.234155	10.765845	10.006292	9.993708	15	5
56	44	9.228048	10.771952	9.234345	10.765655	10.006297	9.993703	16	4
57	15	9.228232	10.771768	9.234535	10.765465	10.006302	9.993698	45	3
58	30	9.228416	10.771584	9.234724	10.765276	10.006308	9.993692	30	2
59	45	9.228600	10.771400	9.234913	10.765087	10.006313	9.993687	15	1
60	45	9.228784	10.771216	9.235103	10.764897	10.006319	9.993681	15	0
sec.	min.	sine	coscant	tangent	cotangent	secant	cosec.	sec.	min.
5° 21'		LOG. SINES, &c.						50 deg.	

0° 39'		LOG. SINES, &c. (t)						9 deg.	
sec.	min.	num.	coscant.	tangent.	cotangent.	secant.	cosec.	min.	sec.
0	45	9.228784	10.771216	9.235103	10.764897	10.006319	9.993681	15	50
1	15	9.228968	10.771032	9.235292	10.764708	10.006324	9.993676	45	59
2	30	9.229151	10.770849	9.235481	10.764519	10.006330	9.993670	30	58
3	45	9.229335	10.770665	9.235670	10.764330	10.006335	9.993665	15	57
4	46	9.229518	10.770482	9.235859	10.764141	10.006340	9.993660	14	56
5	15	9.229702	10.770298	9.236048	10.763952	10.006346	9.993654	45	55
6	30	9.229885	10.770115	9.236237	10.763763	10.006351	9.993649	30	54
7	45	9.230069	10.769931	9.236425	10.763575	10.006357	9.993643	15	53
8	47	9.230252	10.769748	9.236614	10.763386	10.006362	9.993638	13	52
9	15	9.230435	10.769565	9.236802	10.763198	10.006368	9.993632	45	51
10	30	9.230618	10.769382	9.236991	10.763009	10.006373	9.993627	30	50
11	45	9.230801	10.769199	9.237179	10.762821	10.006379	9.993621	15	49
12	48	9.230984	10.769016	9.237368	10.762632	10.006384	9.993616	12	48
13	15	9.231167	10.768833	9.237556	10.762444	10.006389	9.993611	45	47
14	30	9.231349	10.768651	9.237744	10.762256	10.006395	9.993605	30	46
15	45	9.231532	10.768468	9.237932	10.762068	10.006400	9.993600	15	45
16	49	9.231714	10.768286	9.238120	10.761880	10.006406	9.993594	11	44
17	15	9.231897	10.768103	9.238308	10.761692	10.006411	9.993589	45	43
18	30	9.232079	10.767921	9.238496	10.761504	10.006417	9.993583	30	42
19	45	9.232262	10.767738	9.238684	10.761316	10.006422	9.993578	15	41
20	50	9.232444	10.767556	9.238872	10.761128	10.006428	9.993572	10	40
21	15	9.232626	10.767374	9.239059	10.760941	10.006433	9.993567	45	39
22	30	9.232809	10.767192	9.239247	10.760753	10.006439	9.993561	30	38
23	45	9.232990	10.767010	9.239434	10.760566	10.006444	9.993556	15	37
24	51	9.233172	10.766828	9.239622	10.760378	10.006450	9.993550	9	36
25	15	9.233354	10.766646	9.239809	10.760191	10.006455	9.993545	45	35
26	30	9.233536	10.766464	9.239996	10.760004	10.006461	9.993539	30	34
27	45	9.233718	10.766282	9.240184	10.759816	10.006466	9.993534	15	33
28	52	9.233899	10.766101	9.240371	10.759629	10.006472	9.993528	8	32
29	15	9.234081	10.765919	9.240558	10.759442	10.006477	9.993523	45	31
30	30	9.234262	10.765738	9.240745	10.759255	10.006483	9.993517	30	30
31	45	9.234444	10.765556	9.240932	10.759068	10.006488	9.993512	15	29
32	53	9.234625	10.765375	9.241118	10.758882	10.006494	9.993506	7	28
33	15	9.234806	10.765194	9.241305	10.758695	10.006499	9.993501	45	27
34	30	9.234987	10.765013	9.241492	10.758508	10.006505	9.993495	30	26
35	45	9.235168	10.764832	9.241678	10.758322	10.006510	9.993490	15	25
36	54	9.235349	10.764651	9.241865	10.758135	10.006516	9.993484	11	24
37	15	9.235530	10.764470	9.242051	10.757949	10.006521	9.993479	45	23
38	30	9.235711	10.764289	9.242238	10.757762	10.006527	9.993473	30	22
39	45	9.235892	10.764108	9.242424	10.757576	10.006532	9.993468	15	21
40	55	9.236073	10.763927	9.242610	10.757390	10.006538	9.993462	5	20
41	15	9.236253	10.763747	9.242796	10.757204	10.006543	9.993457	45	19
42	30	9.236434	10.763566	9.242982	10.757018	10.006549	9.993451	30	18
43	45	9.236614	10.763386	9.243168	10.756832	10.006554	9.993446	15	17
44	56	9.236795	10.763205	9.243354	10.756646	10.006560	9.993440	4	16
45	15	9.236975	10.763025	9.243540	10.756460	10.006565	9.993435	45	15
46	30	9.237155	10.762845	9.243726	10.756274	10.006571	9.993429	30	14
47	45	9.237335	10.762665	9.243912	10.756088	10.006576	9.993424	15	13
48	57	9.237515	10.762485	9.244097	10.755903	10.006582	9.993418	3	12
49	15	9.237695	10.762305	9.244283	10.755717	10.006587	9.993413	45	11
50	30	9.237875	10.762125	9.244468	10.755532	10.006593	9.993407	30	10
51	45	9.238055	10.761945	9.244654	10.755346	10.006599	9.993401	15	9
52	58	9.238235	10.761765	9.244839	10.755161	10.006604	9.993396	2	8
53	15	9.238415	10.761585	9.245024	10.754976	10.006610	9.993390	45	7
54	30	9.238594	10.761406	9.245209	10.754791	10.006615	9.993385	30	6
55	45	9.238774	10.761226	9.245394	10.754606	10.006621	9.993379	15	5
56	59	9.238953	10.761047	9.245579	10.754421	10.006626	9.993374	1	4
57	15	9.239132	10.760868	9.245764	10.754236	10.006632	9.993368	45	3
58	30	9.239312	10.760689	9.245949	10.754051	10.006637	9.993363	30	2
59	45	9.239491	10.760509	9.246134	10.753866	10.006643	9.993357	15	1
60	60	9.239670	10.760330	9.246319	10.753681	10.006649	9.993351	0	0
sec.	min.	num.	coscant.	tangent.	cotangent.	secant.	cosec.	min.	sec.
5° 30'		LOG. SINES, &c.						80 deg.	

0° 40'.		LOG. SINES, &c. (L.)						10 deg.	
deg.	"	sine.	coscant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	0	9.239670	10.760330	9.246319	10.753681	10.006649	9.993351	60	60
1	15	9.239849	10.760151	9.246503	10.753497	10.006654	9.993346	45	59
2	30	9.240028	10.759972	9.246688	10.753312	10.006660	9.993340	30	58
3	45	9.240207	10.759793	9.246872	10.753128	10.006665	9.993335	15	57
4	1	9.240386	10.759614	9.247057	10.752943	10.006671	9.993329	59	56
5	15	9.240565	10.759435	9.247241	10.752759	10.006676	9.993324	45	55
6	30	9.240744	10.759256	9.247425	10.752575	10.006682	9.993318	30	54
7	45	9.240922	10.759078	9.247610	10.752390	10.006688	9.993312	15	53
8	2	9.241101	10.758899	9.247794	10.752206	10.006693	9.993307	58	52
9	15	9.241279	10.758721	9.247978	10.752022	10.006699	9.993301	45	51
10	30	9.241458	10.758542	9.248162	10.751838	10.006704	9.993296	30	50
11	45	9.241636	10.758364	9.248346	10.751654	10.006710	9.993290	15	49
12	3	9.241814	10.758186	9.248530	10.751470	10.006716	9.993284	57	48
13	15	9.241992	10.758008	9.248713	10.751287	10.006721	9.993279	45	47
14	30	9.242170	10.757830	9.248897	10.751103	10.006727	9.993273	30	46
15	45	9.242348	10.757652	9.249081	10.750919	10.006732	9.993268	15	45
16	4	9.242526	10.757474	9.249264	10.750736	10.006738	9.993262	56	44
17	15	9.242704	10.757296	9.249448	10.750552	10.006744	9.993256	45	43
18	30	9.242882	10.757118	9.249631	10.750369	10.006749	9.993251	30	42
19	45	9.243060	10.756940	9.249814	10.750186	10.006755	9.993245	15	41
20	5	9.243237	10.756763	9.249998	10.750002	10.006760	9.993240	55	40
21	15	9.243415	10.756585	9.250181	10.749819	10.006766	9.993234	45	39
22	30	9.243592	10.756408	9.250364	10.749636	10.006772	9.993229	30	38
23	45	9.243770	10.756230	9.250547	10.749453	10.006777	9.993223	15	37
24	6	9.243947	10.756053	9.250730	10.749270	10.006783	9.993217	54	36
25	15	9.244124	10.755876	9.250913	10.749087	10.006789	9.993211	45	35
26	30	9.244302	10.755698	9.251096	10.748904	10.006794	9.993206	30	34
27	45	9.244479	10.755521	9.251278	10.748722	10.006800	9.993200	15	33
28	7	9.244656	10.755344	9.251461	10.748539	10.006805	9.993195	53	32
29	15	9.244833	10.755167	9.251644	10.748356	10.006811	9.993189	45	31
30	30	9.245010	10.754990	9.251826	10.748174	10.006817	9.993183	30	30
31	45	9.245186	10.754814	9.252009	10.747991	10.006822	9.993178	15	29
32	8	9.245363	10.754637	9.252191	10.747809	10.006828	9.993172	52	28
33	15	9.245540	10.754460	9.252373	10.747627	10.006834	9.993166	45	27
34	30	9.245716	10.754284	9.252556	10.747444	10.006839	9.993161	30	26
35	45	9.245893	10.754107	9.252738	10.747262	10.006845	9.993155	15	25
36	9	9.246069	10.753931	9.252920	10.747080	10.006851	9.993149	51	24
37	15	9.246246	10.753754	9.253102	10.746898	10.006856	9.993144	45	23
38	30	9.246422	10.753578	9.253284	10.746716	10.006862	9.993138	30	22
39	45	9.246598	10.753402	9.253466	10.746534	10.006868	9.993132	15	21
40	10	9.246775	10.753225	9.253648	10.746352	10.006873	9.993127	50	20
41	15	9.246951	10.753049	9.253829	10.746171	10.006879	9.993121	45	19
42	30	9.247127	10.752873	9.254011	10.745990	10.006885	9.993115	30	18
43	45	9.247303	10.752697	9.254193	10.745807	10.006890	9.993110	15	17
44	11	9.247478	10.752522	9.254374	10.745626	10.006896	9.993104	49	16
45	15	9.247654	10.752346	9.254556	10.745444	10.006902	9.993098	45	15
46	30	9.247830	10.752170	9.254737	10.745263	10.006907	9.993093	30	14
47	45	9.248006	10.751994	9.254918	10.745082	10.006913	9.993087	15	13
48	12	9.248181	10.751819	9.255100	10.744900	10.006919	9.993081	48	12
49	15	9.248357	10.751643	9.255281	10.744719	10.006924	9.993076	45	11
50	30	9.248532	10.751468	9.255462	10.744538	10.006930	9.993070	30	10
51	45	9.248707	10.751293	9.255643	10.744357	10.006936	9.993064	15	9
52	13	9.248883	10.751117	9.255824	10.744176	10.006941	9.993059	47	8
53	15	9.249058	10.750942	9.256005	10.743995	10.006947	9.993053	45	7
54	30	9.249233	10.750767	9.256186	10.743814	10.006953	9.993047	30	6
55	45	9.249408	10.750592	9.256366	10.743634	10.006958	9.993042	15	5
56	14	9.249583	10.750417	9.256547	10.743453	10.006964	9.993036	46	4
57	15	9.249758	10.750242	9.256728	10.743272	10.006970	9.993030	45	3
58	30	9.249933	10.750067	9.256908	10.743092	10.006976	9.993024	30	2
59	45	9.250107	10.749893	9.257089	10.742911	10.006981	9.993019	15	1
60	15	9.250282	10.749718	9.257269	10.742731	10.006987	9.993013	45	0
sec.	"	cosine	secant.	cotangent	tangent.	coscant.	sine	"	sec.
5° 19'.		LOG. SINES, &c.						79 deg.	

0° 41'.			LOG. SINES, &c. (t)						10 deg.		
sec.	'	sin.	coscant.	tangent.	cotangent.	secant.	cosine.	'	sec.	'	
0	15	9.250282	10.749718	9.257269	10.742731	10.006987	9.993013	45	60		
1	15	9.250447	10.749553	9.257449	10.742551	10.006993	9.993007	45	59		
2	30	9.250631	10.749369	9.257630	10.742370	10.006998	9.993002	30	58		
3	45	9.250806	10.749194	9.257810	10.742190	10.007004	9.992996	15	57		
4	16	9.250990	10.749020	9.257990	10.742010	10.007010	9.992990	44	56		
5	15	9.251155	10.748845	9.258170	10.741830	10.007016	9.992984	45	55		
6	30	9.251329	10.748671	9.258350	10.741650	10.007021	9.992979	30	54		
7	45	9.251503	10.748497	9.258530	10.741470	10.007027	9.992973	15	53		
8	17	9.251677	10.748323	9.258710	10.741290	10.007033	9.992967	43	52		
9	15	9.251851	10.748149	9.258890	10.741110	10.007038	9.992962	45	51		
10	30	9.252025	10.747975	9.259069	10.740931	10.007044	9.992956	30	50		
11	45	9.252199	10.747801	9.259249	10.740751	10.007050	9.992950	15	49		
12	18	9.252373	10.747627	9.259428	10.740572	10.007056	9.992944	42	48		
13	15	9.252547	10.747453	9.259608	10.740392	10.007061	9.992939	45	47		
14	30	9.252720	10.747280	9.259787	10.740213	10.007067	9.992933	30	46		
15	45	9.252894	10.747106	9.259967	10.740033	10.007073	9.992927	15	45		
16	19	9.253067	10.746933	9.260146	10.739854	10.007079	9.992921	41	44		
17	15	9.253241	10.746759	9.260325	10.739675	10.007084	9.992916	45	43		
18	30	9.253414	10.746586	9.260504	10.739496	10.007090	9.992910	30	42		
19	45	9.253588	10.746412	9.260683	10.739317	10.007096	9.992904	15	41		
20	20	9.253761	10.746239	9.260862	10.739138	10.007102	9.992898	40	40		
21	15	9.253934	10.746066	9.261041	10.738959	10.007107	9.992893	45	39		
22	30	9.254107	10.745893	9.261220	10.738780	10.007113	9.992887	30	38		
23	45	9.254280	10.745720	9.261399	10.738601	10.007119	9.992881	15	37		
24	21	9.254453	10.745547	9.261578	10.738422	10.007125	9.992875	39	36		
25	15	9.254626	10.745374	9.261757	10.738243	10.007131	9.992869	45	35		
26	30	9.254799	10.745201	9.261935	10.738065	10.007136	9.992864	30	34		
27	45	9.254972	10.745028	9.262114	10.737886	10.007142	9.992858	15	33		
28	22	9.255144	10.744856	9.262292	10.737708	10.007148	9.992852	38	32		
29	15	9.255317	10.744683	9.262470	10.737530	10.007154	9.992846	45	31		
30	30	9.255490	10.744511	9.262649	10.737351	10.007159	9.992841	30	30		
31	45	9.255662	10.744338	9.262827	10.737173	10.007165	9.992835	15	29		
32	23	9.255834	10.744166	9.263005	10.736995	10.007171	9.992829	37	28		
33	15	9.256007	10.743993	9.263183	10.736817	10.007177	9.992823	45	27		
34	30	9.256179	10.743821	9.263361	10.736639	10.007183	9.992817	30	26		
35	45	9.256351	10.743649	9.263539	10.736461	10.007188	9.992812	15	25		
36	24	9.256523	10.743477	9.263717	10.736283	10.007194	9.992806	36	24		
37	15	9.256695	10.743305	9.263895	10.736105	10.007200	9.992800	45	23		
38	30	9.256868	10.743133	9.264073	10.735927	10.007206	9.992794	30	22		
39	45	9.257039	10.742961	9.264251	10.735749	10.007212	9.992788	15	21		
40	25	9.257211	10.742789	9.264428	10.735572	10.007217	9.992783	35	20		
41	15	9.257383	10.742617	9.264606	10.735394	10.007223	9.992777	45	19		
42	30	9.257554	10.742446	9.264783	10.735217	10.007229	9.992771	30	18		
43	45	9.257726	10.742274	9.264961	10.735039	10.007235	9.992765	15	17		
44	26	9.257898	10.742102	9.265138	10.734862	10.007241	9.992759	34	16		
45	15	9.258069	10.741931	9.265315	10.734685	10.007246	9.992754	45	15		
46	30	9.258241	10.741759	9.265493	10.734507	10.007252	9.992748	30	14		
47	45	9.258412	10.741588	9.265670	10.734330	10.007258	9.992742	15	13		
48	27	9.258583	10.741417	9.265847	10.734153	10.007264	9.992736	33	12		
49	15	9.258754	10.741246	9.266024	10.733976	10.007270	9.992730	45	11		
50	30	9.258925	10.741075	9.266201	10.733799	10.007276	9.992724	30	10		
51	45	9.259097	10.740903	9.266378	10.733622	10.007281	9.992719	15	9		
52	28	9.259268	10.740732	9.266555	10.733445	10.007287	9.992713	32	8		
53	15	9.259438	10.740562	9.266731	10.733269	10.007293	9.992707	45	7		
54	30	9.259609	10.740391	9.266908	10.733092	10.007299	9.992701	30	6		
55	45	9.259780	10.740220	9.267085	10.732915	10.007305	9.992695	15	5		
56	29	9.259951	10.740049	9.267261	10.732739	10.007311	9.992689	31	4		
57	15	9.260121	10.739879	9.267438	10.732562	10.007316	9.992684	45	3		
58	30	9.260292	10.739708	9.267614	10.732386	10.007322	9.992678	30	2		
59	45	9.260463	10.739537	9.267791	10.732209	10.007328	9.992672	15	1		
60	30	9.260633	10.739367	9.267967	10.732033	10.007334	9.992666	30	0		
sec.	'	cosine	secant.	cotangent.	tangent.	coscant.	sine.	'	sec.	'	
5° 18'.			LOG. SINES, &c.				79 deg.				

0° 42'		LOG. SINES, &c. (L.)						10 deg.	
sec.	"	sine	coscant	tangent	cotangent	secant	cosec	"	sec.
0	30	9.260633	10.739367	9.267967	10.732033	10.007334	9.992666	30	60
1	15	9.260803	10.739197	9.268143	10.731857	10.007340	9.992660	45	59
2	30	9.260974	10.739026	9.268319	10.731681	10.007346	9.992654	30	58
3	45	9.261144	10.738856	9.268495	10.731505	10.007351	9.992649	15	57
4	31	9.261314	10.738686	9.268671	10.731329	10.007357	9.992643	29	■
5	15	9.261484	10.738516	9.268847	10.731153	10.007363	9.992637	45	55
6	30	9.261654	10.738346	9.269023	10.730977	10.007369	9.992631	30	54
7	45	9.261824	10.738176	9.269199	10.730801	10.007375	9.992625	15	53
8	32	9.261994	10.738006	9.269375	10.730625	10.007381	9.992619	28	■
9	15	9.262164	10.737836	9.269551	10.730449	10.007387	9.992613	45	51
10	30	9.262334	10.737666	9.269726	10.730274	10.007393	9.992607	30	50
11	45	9.262503	10.737497	9.269902	10.730098	10.007398	9.992602	15	49
12	33	9.262673	10.737327	9.270077	10.729923	10.007404	9.992596	27	48
13	15	9.262843	10.737158	9.270253	10.729747	10.007410	9.992590	45	47
14	30	9.263012	10.736988	9.270428	10.729572	10.007416	9.992584	30	46
15	45	9.263181	10.736819	9.270603	10.729397	10.007422	9.992578	15	45
16	34	9.263351	10.736649	9.270779	10.729221	10.007428	9.992572	26	44
17	15	9.263520	10.736480	9.270954	10.729046	10.007434	9.992566	45	43
18	■	9.263689	10.736311	9.271129	10.728871	10.007440	9.992560	30	42
19	■	9.263858	10.736142	9.271304	10.728696	10.007446	9.992554	15	41
20	35	9.264027	10.735973	9.271479	10.728521	10.007451	9.992549	25	40
21	15	9.264196	10.735804	9.271654	10.728346	10.007457	9.992543	45	39
22	30	9.264365	10.735635	9.271829	10.728171	10.007463	9.992537	30	38
23	■	9.264534	10.735466	9.272003	10.727997	10.007469	9.992531	15	37
24	36	9.264703	10.735297	9.272178	10.727822	10.007475	9.992525	24	36
25	■	9.264872	10.735128	9.272353	10.727647	10.007481	9.992519	45	35
26	30	9.265040	10.734960	9.272527	10.727473	10.007487	9.992513	30	34
27	45	9.265209	10.734791	9.272702	10.727298	10.007493	9.992507	15	33
28	37	9.265377	10.734623	9.272876	10.727124	10.007499	9.992501	23	32
29	15	9.265546	10.734454	9.273051	10.726949	10.007505	9.992495	45	31
30	30	9.265714	10.734286	9.273225	10.726775	10.007511	9.992489	30	30
31	45	9.265883	10.734117	9.273399	10.726601	10.007517	9.992483	15	29
32	38	9.266051	10.733949	9.273573	10.726427	10.007522	9.992478	22	28
33	15	9.266219	10.733781	9.273747	10.726253	10.007528	9.992472	45	27
34	30	9.266387	10.733613	9.273921	10.726079	10.007534	9.992466	30	26
35	45	9.266555	10.733445	9.274095	10.725905	10.007540	9.992460	15	25
36	39	9.266723	10.733277	9.274269	10.725731	10.007546	9.992454	21	24
37	15	9.266891	10.733109	9.274443	10.725557	10.007552	9.992448	45	23
38	30	9.267059	10.732941	9.274617	10.725383	10.007558	9.992442	30	22
39	45	9.267227	10.732773	9.274791	10.725209	10.007564	9.992436	15	21
40	40	9.267394	10.732606	9.274964	10.725036	10.007570	9.992430	20	20
41	15	9.267562	10.732438	9.275138	10.724862	10.007576	9.992424	45	19
42	30	9.267730	10.732270	9.275312	10.724688	10.007582	9.992418	30	18
43	45	9.267897	10.732103	9.275485	10.724515	10.007588	9.992412	15	17
44	41	9.268065	10.731935	9.275658	10.724342	10.007594	9.992406	19	16
45	15	9.268232	10.731768	9.275832	10.724168	10.007600	9.992400	45	15
46	■	9.268399	10.731601	9.276005	10.723995	10.007606	9.992394	30	14
47	45	9.268567	10.731433	9.276178	10.723822	10.007612	9.992388	15	13
48	42	9.268734	10.731266	9.276351	10.723649	10.007618	9.992382	18	12
49	15	9.268901	10.731099	9.276524	10.723476	10.007624	9.992376	45	11
50	30	9.269068	10.730932	9.276697	10.723303	10.007630	9.992370	30	10
51	45	9.269235	10.730765	9.276870	10.723130	10.007636	9.992364	15	9
52	43	9.269402	10.730598	9.277043	10.722957	10.007642	9.992358	17	8
53	15	9.269569	10.730431	9.277216	10.722784	10.007648	9.992352	45	7
54	30	9.269735	10.730265	9.277389	10.722611	10.007653	9.992347	30	6
55	45	9.269902	10.730098	9.277562	10.722438	10.007659	9.992341	15	5
56	44	9.270069	10.729931	9.277734	10.722266	10.007665	9.992335	16	4
57	15	9.270235	10.729765	9.277907	10.722093	10.007671	9.992329	45	3
58	30	9.270402	10.729598	9.278079	10.721921	10.007677	9.992323	30	2
59	45	9.270568	10.729432	9.278252	10.721748	10.007683	9.992317	15	1
60	45	9.270735	10.729265	9.278424	10.721576	10.007689	9.992311	15	0
sec.	"	sine	coscant	tangent	cotangent	secant	cosec	"	sec.
5° 17'		LOG. SINES, &c.						79 deg.	

0° 43'		LOG. SINES, &c. (1.)						10 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosec.	"	sec.
0	45	9.270735	10.729265	9.278424	10.721576	10.007689	9.992311	15	60
1	15	9.270901	10.729099	9.278596	10.721404	10.007695	9.992305	45	59
2	30	9.271067	10.728933	9.278769	10.721231	10.007701	9.992299	30	58
3	45	9.271234	10.728766	9.278941	10.721059	10.007707	9.992293	15	57
4	46	9.271400	10.728600	9.279113	10.720887	10.007713	9.992287	14	56
5	15	9.271566	10.728434	9.279285	10.720715	10.007719	9.992281	45	55
6	30	9.271732	10.728268	9.279457	10.720543	10.007725	9.992275	30	54
7	45	9.271898	10.728102	9.279629	10.720371	10.007731	9.992269	15	53
8	47	9.272063	10.727937	9.279801	10.720199	10.007737	9.992263	13	52
9	15	9.272229	10.727771	9.279973	10.720027	10.007743	9.992257	45	51
10	30	9.272395	10.727605	9.280144	10.719856	10.007749	9.992251	30	50
11	45	9.272561	10.727439	9.280316	10.719684	10.007755	9.992244	15	49
12	48	9.272726	10.727274	9.280488	10.719512	10.007762	9.992238	12	48
13	15	9.272892	10.727108	9.280659	10.719341	10.007768	9.992232	45	47
14	30	9.273057	10.726943	9.280831	10.719169	10.007774	9.992226	30	46
15	45	9.273223	10.726777	9.281002	10.718998	10.007780	9.992220	15	45
16	49	9.273388	10.726612	9.281174	10.718826	10.007786	9.992214	11	44
17	15	9.273553	10.726447	9.281345	10.718655	10.007792	9.992208	45	43
18	30	9.273718	10.726282	9.281516	10.718484	10.007798	9.992202	30	42
19	45	9.273884	10.726116	9.281687	10.718313	10.007804	9.992196	15	41
20	50	9.274049	10.725951	9.281858	10.718142	10.007810	9.992190	10	40
21	15	9.274214	10.725786	9.282029	10.717971	10.007816	9.992184	45	39
22	30	9.274379	10.725621	9.282200	10.717800	10.007822	9.992178	30	38
23	45	9.274543	10.725457	9.282371	10.717629	10.007828	9.992172	15	37
24	51	9.274708	10.725292	9.282542	10.717458	10.007834	9.992166	9	36
25	15	9.274873	10.725127	9.282713	10.717287	10.007840	9.992160	45	35
26	30	9.275038	10.724962	9.282884	10.717116	10.007846	9.992154	30	34
27	45	9.275202	10.724798	9.283054	10.716946	10.007852	9.992148	15	33
28	52	9.275367	10.724633	9.283225	10.716775	10.007858	9.992142	8	32
29	15	9.275531	10.724469	9.283396	10.716604	10.007864	9.992136	45	31
30	30	9.275696	10.724304	9.283566	10.716434	10.007870	9.992130	30	30
31	45	9.275860	10.724140	9.283737	10.716263	10.007876	9.992124	15	29
32	53	9.276024	10.723976	9.283907	10.716093	10.007882	9.992117	7	28
33	15	9.276189	10.723811	9.284077	10.715923	10.007889	9.992111	45	27
34	30	9.276353	10.723647	9.284247	10.715753	10.007895	9.992105	30	26
35	45	9.276517	10.723483	9.284418	10.715582	10.007901	9.992099	15	25
36	54	9.276681	10.723319	9.284588	10.715412	10.007907	9.992093	6	24
37	15	9.276845	10.723155	9.284758	10.715242	10.007913	9.992087	45	23
38	30	9.277009	10.722991	9.284928	10.715072	10.007919	9.992081	30	22
39	45	9.277173	10.722827	9.285098	10.714902	10.007925	9.992075	15	21
40	55	9.277337	10.722663	9.285268	10.714732	10.007931	9.992069	5	20
41	15	9.277500	10.722500	9.285437	10.714563	10.007937	9.992063	45	19
42	30	9.277664	10.722336	9.285607	10.714393	10.007943	9.992057	30	18
43	45	9.277827	10.722173	9.285777	10.714223	10.007949	9.992051	15	17
44	56	9.277991	10.722009	9.285947	10.714053	10.007956	9.992044	4	16
45	15	9.278154	10.721846	9.286116	10.713884	10.007962	9.992038	45	15
46	30	9.278318	10.721682	9.286286	10.713714	10.007968	9.992032	30	14
47	45	9.278481	10.721519	9.286455	10.713545	10.007974	9.992026	15	13
48	57	9.278644	10.721356	9.286624	10.713376	10.007980	9.992020	3	12
49	15	9.278808	10.721192	9.286794	10.713206	10.007986	9.992014	45	11
50	30	9.278971	10.721029	9.286963	10.713037	10.007992	9.992008	30	10
51	45	9.279134	10.720866	9.287132	10.712868	10.007998	9.992002	15	9
52	58	9.279297	10.720703	9.287301	10.712699	10.008004	9.991996	2	8
53	15	9.279460	10.720540	9.287470	10.712530	10.008011	9.991989	45	7
54	30	9.279623	10.720377	9.287639	10.712361	10.008017	9.991983	30	6
55	45	9.279786	10.720214	9.287808	10.712192	10.008023	9.991977	15	5
56	59	9.279948	10.720052	9.287977	10.712023	10.008029	9.991971	1	4
57	15	9.280111	10.719889	9.288146	10.711854	10.008035	9.991965	45	3
58	30	9.280274	10.719726	9.288315	10.711685	10.008041	9.991959	30	2
59	45	9.280436	10.719564	9.288484	10.711516	10.008047	9.991953	15	1
60	60	9.280599	10.719401	9.288652	10.711348	10.008053	9.991947	0	0
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosec.	"	sec.
5° 16'		LOG. SINES, &c.						79 deg.	

0° 44".		LOG. SINES, &c. (c.)						11 deg.	
sec.	"	sine.	coscant.	tangent.	cotangent.	secant.	cosec.	"	sec.
0	0	9.280599	10.719401	9.288652	10.711348	10.008053	9.991947	60	60
1	15	9.280761	10.719239	9.288821	10.711179	10.008060	9.991940	45	59
2	30	9.280924	10.719076	9.288989	10.711011	10.008066	9.991934	30	58
3	45	9.281086	10.718914	9.289158	10.710842	10.008072	9.991928	15	57
4	1	9.281248	10.718752	9.289326	10.710674	10.008078	9.991922	59	56
5	15	9.281410	10.718590	9.289495	10.710505	10.008084	9.991916	45	55
6	30	9.281573	10.718427	9.289663	10.710337	10.008090	9.991910	30	54
7	45	9.281735	10.718265	9.289831	10.710169	10.008097	9.991903	15	53
8	2	9.281897	10.718103	9.289999	10.710001	10.008103	9.991897	58	52
9	15	9.282059	10.717941	9.290167	10.709833	10.008109	9.991891	45	51
10	30	9.282222	10.717778	9.290335	10.709665	10.008115	9.991885	30	50
11	45	9.282382	10.717618	9.290503	10.709497	10.008121	9.991879	15	49
12	3	9.282544	10.717456	9.290671	10.709329	10.008127	9.991873	57	48
13	15	9.282706	10.717294	9.290839	10.709161	10.008133	9.991867	45	47
14	30	9.282867	10.717133	9.291007	10.708993	10.008140	9.991860	30	46
15	45	9.283029	10.716971	9.291175	10.708825	10.008146	9.991854	15	45
16	4	9.283190	10.716810	9.291342	10.708658	10.008152	9.991848	56	44
17	15	9.283352	10.716648	9.291510	10.708490	10.008158	9.991842	45	43
18	30	9.283513	10.716487	9.291678	10.708322	10.008164	9.991836	30	42
19	45	9.283675	10.716325	9.291845	10.708155	10.008171	9.991829	15	41
20	5	9.283836	10.716164	9.292013	10.707987	10.008177	9.991823	55	40
21	15	9.283997	10.716003	9.292180	10.707820	10.008183	9.991817	45	39
22	30	9.284158	10.715842	9.292347	10.707653	10.008189	9.991811	30	38
23	45	9.284319	10.715681	9.292514	10.707486	10.008195	9.991805	15	37
24	6	9.284480	10.715520	9.292682	10.707318	10.008201	9.991799	54	36
25	15	9.284641	10.715359	9.292849	10.707151	10.008208	9.991792	45	35
26	30	9.284802	10.715198	9.293016	10.706984	10.008214	9.991786	30	34
27	45	9.284963	10.715037	9.293183	10.706817	10.008220	9.991780	15	33
28	7	9.285124	10.714876	9.293350	10.706650	10.008226	9.991774	53	32
29	15	9.285284	10.714716	9.293517	10.706483	10.008233	9.991767	45	31
30	30	9.285445	10.714555	9.293684	10.706316	10.008239	9.991761	30	30
31	45	9.285606	10.714394	9.293850	10.706150	10.008245	9.991755	15	29
32	8	9.285766	10.714233	9.294017	10.705983	10.008251	9.991749	52	28
33	15	9.285927	10.714073	9.294184	10.705816	10.008257	9.991743	45	27
34	30	9.286087	10.713913	9.294350	10.705650	10.008264	9.991736	30	26
35	45	9.286247	10.713753	9.294517	10.705483	10.008270	9.991730	15	25
36	9	9.286408	10.713592	9.294684	10.705316	10.008276	9.991724	51	24
37	15	9.286568	10.713432	9.294850	10.705150	10.008282	9.991718	45	23
38	30	9.286728	10.713272	9.295016	10.704984	10.008288	9.991712	30	22
39	45	9.286888	10.713112	9.295183	10.704817	10.008295	9.991705	15	21
40	10	9.287048	10.712952	9.295349	10.704651	10.008301	9.991699	50	20
41	15	9.287208	10.712792	9.295515	10.704485	10.008307	9.991693	45	19
42	30	9.287369	10.712632	9.295681	10.704319	10.008313	9.991687	30	18
43	45	9.287528	10.712472	9.295847	10.704153	10.008320	9.991680	15	17
44	11	9.287687	10.712313	9.296013	10.703987	10.008326	9.991674	49	16
45	15	9.287847	10.712153	9.296179	10.703821	10.008332	9.991668	45	15
46	30	9.288007	10.711993	9.296345	10.703655	10.008338	9.991662	30	14
47	45	9.288166	10.711834	9.296511	10.703489	10.008345	9.991655	15	13
48	12	9.288326	10.711674	9.296677	10.703323	10.008351	9.991649	48	12
49	15	9.288485	10.711515	9.296843	10.703157	10.008357	9.991643	45	11
50	30	9.288645	10.711355	9.297008	10.702992	10.008363	9.991637	30	10
51	45	9.288804	10.711196	9.297174	10.702826	10.008370	9.991630	15	9
52	13	9.288964	10.711036	9.297339	10.702661	10.008376	9.991624	47	8
53	15	9.289123	10.710877	9.297505	10.702495	10.008382	9.991618	45	7
54	30	9.289282	10.710718	9.297670	10.702330	10.008388	9.991612	30	6
55	45	9.289441	10.710559	9.297836	10.702164	10.008395	9.991605	15	5
56	14	9.289600	10.710400	9.298001	10.701999	10.008401	9.991599	46	4
57	15	9.289759	10.710241	9.298166	10.701834	10.008407	9.991593	45	3
58	30	9.289918	10.710082	9.298332	10.701668	10.008414	9.991586	30	2
59	45	9.290077	10.709923	9.298497	10.701503	10.008420	9.991580	15	1
60	15	9.290236	10.709764	9.298662	10.701338	10.008426	9.991574	45	0
sec.	"	sine.	coscant.	tangent.	cotangent.	secant.	cosec.	"	sec.
5° 15".		LOG. SINES, &c.						78 deg.	

0° 45'		LOG. SINES, &c. (L.)						11 deg.	
sec.		sine	coscant.	tangent	cotangent.	secant.	cosine.		
0	15	9.290238	10.709764	9.298662	10.701338	10.008426	9.991574	15	
1	15	9.290394	10.709606	9.298827	10.701173	10.008432	9.991568	45	
2	30	9.290553	10.709447	9.298992	10.701008	10.008439	9.991561	30	
3	45	9.290712	10.709288	9.299157	10.700843	10.008445	9.991555	15	
4	16	9.290870	10.709130	9.299322	10.700678	10.008451	9.991549	44	
5	15	9.291029	10.708971	9.299486	10.700514	10.008458	9.991542	45	
6	30	9.291187	10.708813	9.299651	10.700349	10.008464	9.991536	30	
7	45	9.291346	10.708654	9.299816	10.700184	10.008470	9.991530	15	
8	17	9.291504	10.708496	9.299980	10.700020	10.008476	9.991524	43	
9	15	9.291662	10.708338	9.300145	10.699855	10.008483	9.991517	45	
10	30	9.291820	10.708180	9.300309	10.699691	10.008489	9.991511	30	
11	45	9.291979	10.708021	9.300474	10.699526	10.008495	9.991505	15	
12	18	9.292137	10.707863	9.300638	10.699362	10.008502	9.991498	42	
13	15	9.292295	10.707705	9.300803	10.699197	10.008508	9.991492	45	
14	30	9.292453	10.707547	9.300967	10.699033	10.008514	9.991486	30	
15	45	9.292611	10.707389	9.301131	10.698869	10.008521	9.991479	15	
16	19	9.292768	10.707232	9.301295	10.698705	10.008527	9.991473	41	
17	15	9.292926	10.707074	9.301459	10.698541	10.008533	9.991467	45	
18	30	9.293084	10.706916	9.301623	10.698377	10.008540	9.991460	30	
19	45	9.293242	10.706758	9.301787	10.698213	10.008546	9.991454	15	
20	20	9.293399	10.706601	9.301951	10.698049	10.008552	9.991448	40	
21	15	9.293557	10.706443	9.302115	10.697885	10.008559	9.991441	45	
22	30	9.293714	10.706286	9.302279	10.697721	10.008565	9.991435	30	
23	45	9.293872	10.706128	9.302443	10.697557	10.008571	9.991429	15	
24	21	9.294029	10.705971	9.302607	10.697393	10.008578	9.991422	39	
25	15	9.294186	10.705814	9.302770	10.697230	10.008584	9.991416	45	
26	30	9.294344	10.705656	9.302934	10.697066	10.008590	9.991410	30	
27	45	9.294501	10.705499	9.303097	10.696903	10.008597	9.991403	15	
28	22	9.294658	10.705342	9.303261	10.696739	10.008603	9.991397	38	
29	15	9.294815	10.705185	9.303424	10.696575	10.008609	9.991391	45	
30	30	9.294972	10.705028	9.303588	10.696412	10.008616	9.991384	30	
31	45	9.295129	10.704871	9.303751	10.696249	10.008622	9.991378	15	
32	23	9.295286	10.704714	9.303914	10.696085	10.008628	9.991372	37	
33	15	9.295443	10.704557	9.304077	10.695923	10.008635	9.991365	45	
34	30	9.295600	10.704400	9.304241	10.695759	10.008641	9.991359	30	
35	45	9.295756	10.704244	9.304404	10.695596	10.008647	9.991353	15	
36	24	9.295913	10.704087	9.304567	10.695433	10.008654	9.991346	36	
37	15	9.296070	10.703930	9.304730	10.695270	10.008660	9.991340	45	
38	30	9.296226	10.703774	9.304893	10.695107	10.008667	9.991333	30	
39	45	9.296383	10.703617	9.305055	10.694945	10.008673	9.991327	15	
40	25	9.296539	10.703461	9.305218	10.694782	10.008679	9.991321	35	
41	15	9.296695	10.703305	9.305381	10.694619	10.008686	9.991314	45	
42	30	9.296852	10.703148	9.305544	10.694456	10.008692	9.991308	30	
43	45	9.297008	10.702992	9.305706	10.694294	10.008698	9.991302	15	
44	26	9.297164	10.702836	9.305869	10.694131	10.008705	9.991295	34	
45	15	9.297320	10.702680	9.306031	10.693969	10.008711	9.991289	45	
46	30	9.297476	10.702524	9.306194	10.693806	10.008718	9.991282	30	
47	45	9.297632	10.702368	9.306356	10.693644	10.008724	9.991276	15	
48	27	9.297788	10.702212	9.306519	10.693481	10.008730	9.991270	33	
49	15	9.297944	10.702056	9.306681	10.693319	10.008737	9.991263	45	
50	30	9.298100	10.701900	9.306843	10.693157	10.008743	9.991257	30	
51	45	9.298256	10.701744	9.307005	10.692995	10.008750	9.991250	15	
52	28	9.298412	10.701588	9.307167	10.692833	10.008756	9.991244	32	
53	15	9.298567	10.701433	9.307330	10.692670	10.008762	9.991238	45	
54	30	9.298723	10.701277	9.307492	10.692508	10.008769	9.991231	30	
55	45	9.298878	10.701122	9.307654	10.692346	10.008775	9.991225	15	
56	29	9.299034	10.700966	9.307815	10.692185	10.008782	9.991218	31	
57	15	9.299189	10.700811	9.307977	10.692023	10.008788	9.991212	45	
58	30	9.299345	10.700655	9.308139	10.691861	10.008794	9.991206	30	
59	45	9.299500	10.700500	9.308301	10.691699	10.008801	9.991199	15	
60	30	9.299655	10.700345	9.308463	10.691537	10.008807	9.991193	30	
sec.		cosine.	secant.	cotangent.	tangent.	coscant.	sine.		
54 14'		LOG. SINES, &c.						78 deg	

0° 46'.		LOG. SINES, &c. (t.)					11 deg.	
	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.		sec.
30	9.299655	10.700345	9.308463	10.691537	10.008807	9.991193	30	60
15	9.299810	10.700190	9.308624	10.691376	10.008814	9.991186	45	59
30	9.299966	10.700034	9.308786	10.691214	10.008820	9.991180	30	58
45	9.300121	10.699879	9.308947	10.691053	10.008827	9.991173	15	57
31	9.300276	10.699724	9.309109	10.690891	10.008833	9.991167	29	56
15	9.300431	10.699569	9.309270	10.690730	10.008840	9.991160	45	55
30	9.300586	10.699414	9.309432	10.690568	10.008846	9.991154	30	54
45	9.300740	10.699260	9.309593	10.690407	10.008852	9.991148	15	53
32	9.300895	10.699105	9.309754	10.690246	10.008859	9.991141	28	52
15	9.301050	10.698950	9.309915	10.690085	10.008865	9.991135	45	51
30	9.301205	10.698795	9.310076	10.689924	10.008872	9.991128	30	50
45	9.301359	10.698641	9.310237	10.689763	10.008878	9.991122	15	49
33	9.301514	10.698486	9.310398	10.689602	10.008885	9.991115	27	48
15	9.301668	10.698332	9.310559	10.689441	10.008891	9.991109	45	47
30	9.301823	10.698177	9.310720	10.689280	10.008898	9.991102	30	46
45	9.301977	10.698023	9.310881	10.689119	10.008904	9.991096	15	45
34	9.302132	10.697868	9.311042	10.688958	10.008910	9.991090	26	44
15	9.302286	10.697714	9.311203	10.688797	10.008917	9.991083	45	43
30	9.302440	10.697560	9.311363	10.688637	10.008923	9.991077	30	42
45	9.302594	10.697406	9.311524	10.688476	10.008930	9.991070	15	41
35	9.302748	10.697252	9.311685	10.688315	10.008936	9.991064	25	40
15	9.302903	10.697097	9.311845	10.688155	10.008943	9.991057	45	39
30	9.303057	10.696943	9.312006	10.687994	10.008949	9.991051	30	38
45	9.303210	10.696790	9.312166	10.687834	10.008956	9.991044	15	37
36	9.303364	10.696636	9.312327	10.687673	10.008962	9.991038	24	36
15	9.303518	10.696482	9.312487	10.687513	10.008969	9.991031	45	35
30	9.303672	10.696328	9.312647	10.687353	10.008975	9.991025	30	34
45	9.303826	10.696174	9.312807	10.687193	10.008982	9.991018	15	33
37	9.303979	10.696021	9.312967	10.687033	10.008988	9.991012	23	32
15	9.304133	10.695867	9.313128	10.686872	10.008995	9.991005	45	31
30	9.304286	10.695714	9.313288	10.686712	10.009001	9.990999	30	30
45	9.304440	10.695560	9.313448	10.686552	10.009008	9.990992	15	29
38	9.304593	10.695407	9.313608	10.686392	10.009014	9.990986	22	28
15	9.304747	10.695253	9.313767	10.686233	10.009021	9.990979	45	27
30	9.304900	10.695100	9.313927	10.686073	10.009027	9.990973	30	26
45	9.305053	10.694947	9.314087	10.685913	10.009034	9.990966	15	25
39	9.305207	10.694793	9.314247	10.685753	10.009040	9.990960	21	24
15	9.305360	10.694640	9.314406	10.685594	10.009047	9.990953	45	23
30	9.305513	10.694487	9.314566	10.685434	10.009053	9.990947	30	22
45	9.305666	10.694334	9.314726	10.685274	10.009060	9.990940	15	21
40	9.305819	10.694181	9.314885	10.685115	10.009066	9.990934	20	20
15	9.305972	10.694028	9.315045	10.684955	10.009073	9.990927	45	19
30	9.306125	10.693875	9.315204	10.684796	10.009079	9.990921	30	18
45	9.306277	10.693723	9.315363	10.684637	10.009086	9.990914	15	17
41	9.306430	10.693570	9.315523	10.684477	10.009092	9.990908	19	16
15	9.306583	10.693417	9.315682	10.684318	10.009099	9.990901	45	15
30	9.306736	10.693264	9.315841	10.684159	10.009105	9.990895	30	14
45	9.306889	10.693112	9.316000	10.684000	10.009112	9.990888	15	13
42	9.307041	10.692959	9.316159	10.683841	10.009119	9.990881	18	12
15	9.307193	10.692807	9.316318	10.683682	10.009125	9.990875	45	11
30	9.307346	10.692654	9.316477	10.683523	10.009132	9.990868	30	10
45	9.307498	10.692502	9.316636	10.683364	10.009138	9.990862	15	9
43	9.307650	10.692350	9.316795	10.683205	10.009145	9.990855	17	8
15	9.307803	10.692197	9.316954	10.683046	10.009151	9.990849	45	7
30	9.307955	10.692045	9.317112	10.682888	10.009158	9.990842	30	6
45	9.308107	10.691893	9.317271	10.682729	10.009164	9.990836	15	5
44	9.308259	10.691741	9.317430	10.682570	10.009171	9.990829	16	4
15	9.308411	10.691589	9.317588	10.682412	10.009177	9.990823	45	3
30	9.308563	10.691437	9.317747	10.682253	10.009184	9.990816	30	2
45	9.308715	10.691285	9.317905	10.682095	10.009191	9.990809	15	1
45	9.308867	10.691133	9.318064	10.681936	10.009197	9.990803	15	0
	sine.	secant.	cotangent.	tangent.	cosecant.	sine.		sec.
5° 13'.		LOG. SINES, &c.					78 deg.	

0° 47'		LOG. SINES, &c. (1)						11 deg	
sec.	"	sine.	coscant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	45	9.308867	10.691133	9.318064	10.681936	10.009197	9.990803	15	60
1	15	9.309019	10.690981	9.318222	10.681778	10.009204	9.990796	45	53
2	30	9.309170	10.690830	9.318381	10.681619	10.009210	9.990790	■	58
3	45	9.309322	10.690678	9.318539	10.681461	10.009217	9.990783	■	57
4	46	9.309474	10.690526	9.318697	10.681303	10.009223	9.990777	14	56
5	15	9.309625	10.690375	9.318855	10.681145	10.009230	9.990770	45	55
6	30	9.309777	10.690223	9.319013	10.680987	10.009237	9.990763	30	54
7	45	9.309928	10.690072	9.319171	10.680829	10.009243	9.990757	15	53
8	47	9.310080	10.689920	9.319329	10.680671	10.009250	9.990750	13	52
9	15	9.310231	10.689769	9.319487	10.680513	10.009256	9.990744	45	51
10	30	9.310382	10.689618	9.319645	10.680355	10.009263	9.990737	30	50
11	45	9.310534	10.689466	9.319803	10.680197	■ 009270	9.990730	15	49
12	48	9.310685	10.689315	9.319961	10.680039	10.009276	9.990724	12	48
13	15	9.310836	10.689164	9.320119	10.679881	■	9.990717	45	47
14	30	9.310987	10.689013	9.320276	10.679724	10.009289	9.990711	30	46
15	45	9.311138	10.688862	9.320434	10.679566	10.009296	9.990704	15	45
16	49	9.311289	10.688711	9.320592	10.679408	■ 009303	9.990697	11	44
17	15	9.311440	10.688560	9.320749	10.679251	10.009309	9.990691	45	43
18	30	9.311591	10.688409	9.320907	10.679093	10.009316	9.990684	30	42
19	45	9.311742	10.688258	9.321064	10.678936	10.009322	9.990678	15	41
20	50	9.311893	10.688107	9.321222	10.678778	10.009329	9.990671	10	40
21	15	9.312043	10.687957	9.321379	10.678621	10.009336	9.990664	45	39
22	30	9.312194	10.687806	9.321536	10.678464	■ 009342	9.990658	30	38
23	45	9.312345	10.687655	9.321693	10.678307	10.009349	9.990651	15	37
24	51	9.312495	10.687505	9.321851	10.678149	10.009356	9.990644	9	36
25	15	9.312646	10.687354	9.322008	10.677992	■ 009362	9.990638	45	35
26	30	9.312796	10.687204	9.322165	10.677835	10.009369	9.990631	30	■
27	45	9.312946	10.687054	9.322322	10.677678	10.009375	9.990625	15	33
28	52	9.313097	10.686903	9.322479	10.677521	10.009382	9.990618	8	32
29	15	9.313247	10.686753	9.322636	10.677364	10.009389	9.990611	45	31
30	30	9.313397	10.686603	9.322793	10.677207	10.009395	9.990605	30	30
31	45	9.313548	10.686453	9.322949	10.677051	10.009402	9.990598	15	29
32	53	9.313699	10.686302	9.323106	10.676894	10.009409	9.990591	7	28
■	■	9.313848	10.686152	9.323263	10.676737	10.009415	9.990585	45	27
34	30	9.313998	10.686002	9.323419	10.676581	10.009422	9.990578	30	26
35	45	9.314148	10.685852	9.323576	10.676424	10.009429	9.990571	15	25
36	54	9.314297	10.685703	9.323733	10.676267	10.009435	9.990565	6	24
37	■	9.314447	10.685553	9.323889	10.676111	10.009442	9.990558	45	23
38	30	9.314597	10.685403	9.324046	10.675954	10.009449	9.990551	30	22
39	45	9.314747	10.685253	9.324202	10.675798	10.009455	9.990545	15	21
40	55	9.314896	10.685104	9.324358	10.675642	10.009462	9.990538	5	20
41	15	9.315046	10.684954	9.324515	10.675485	10.009469	9.990531	45	19
42	30	9.315196	10.684804	9.324671	10.675329	10.009475	9.990525	30	1
43	45	9.315345	10.684655	9.324827	10.675173	10.009482	9.990518	15	17
44	56	9.315495	10.684505	9.324983	10.675017	10.009489	9.990511	4	16
45	15	9.315644	10.684356	9.325139	10.674861	10.009495	9.990505	45	15
46	30	9.315793	10.684207	9.325295	10.674705	10.009502	9.990498	30	14
47	45	9.315943	10.684057	9.325451	10.674549	10.009509	9.990491	15	■
48	57	9.316092	10.683908	9.325607	10.674393	10.009515	9.990485	3	13
49	15	9.316241	10.683759	9.325763	10.674237	10.009522	9.990478	45	12
50	30	9.316390	10.683610	9.325919	10.674081	10.009529	9.990471	30	10
51	45	9.316539	10.683461	9.326075	10.673925	10.009535	9.990465	15	9
52	58	9.316688	10.683312	9.326230	10.673770	10.009542	9.990458	■	8
53	15	9.316837	10.683163	9.326386	10.673614	10.009549	9.990451	45	7
54	30	9.316986	10.683014	9.326542	10.673458	10.009555	9.990445	■	6
55	45	9.317135	10.682865	9.326697	10.673303	10.009562	9.990438	15	5
56	59	9.317284	10.682716	9.326853	10.673147	10.009569	9.990431	1	4
57	15	9.317433	10.682567	9.327009	10.672992	10.009576	9.990424	45	3
58	30	9.317582	10.682418	9.327164	10.672836	10.009582	9.990418	30	2
59	45	9.317730	10.682270	9.327319	10.672681	10.009589	9.990411	15	1
60	60	9.317879	10.682121	9.327474	10.672526	10.009596	9.990404	0	0
sec.	"	cosine.	secant.	cotangent.	tangent.	coscant.	sine.	"	sec.
5° 12'		LOG. SINES, &c.						78 deg.	

0° 48'.		LOG. SINES, &c. (L)						12 deg.	
sec.	"	sine.	coscant.	tangent.	cotangent.	secant.	cosec.	"	sec.
0	0	9.317879	10.682121	9.327474	10.672526	10.009596	9.990404	60	60
1	15	9.318027	10.681973	9.327630	10.672370	10.009602	9.990398	45	59
2	30	9.318176	10.681824	9.327785	10.672215	10.009609	9.990391	30	58
3	45	9.318324	10.681676	9.327940	10.672060	10.009616	9.990384	15	57
4	1	9.318473	10.681527	9.328095	10.671905	10.009623	9.990377	59	56
5	15	9.318621	10.681379	9.328250	10.671750	10.009629	9.990371	45	55
6	30	9.318769	10.681231	9.328405	10.671595	10.009636	9.990364	30	54
7	45	9.318918	10.681082	9.328560	10.671440	10.009643	9.990357	15	53
8	2	9.319066	10.680934	9.328715	10.671285	10.009649	9.990351	58	52
9	15	9.319214	10.680786	9.328870	10.671130	10.009656	9.990344	45	51
10	30	9.319362	10.680638	9.329025	10.670975	10.009663	9.990337	30	50
11	45	9.319510	10.680490	9.329180	10.670820	10.009670	9.990330	15	49
12	3	9.319658	10.680342	9.329334	10.670666	10.009676	9.990324	57	48
13	15	9.319806	10.680194	9.329489	10.670511	10.009683	9.990317	45	47
14	30	9.319954	10.680046	9.329644	10.670356	10.009690	9.990310	30	46
15	45	9.320102	10.679898	9.329798	10.670202	10.009697	9.990303	15	45
16	4	9.320249	10.679751	9.329953	10.670047	10.009703	9.990297	56	44
17	15	9.320397	10.679603	9.330107	10.669893	10.009710	9.990290	45	43
18	30	9.320545	10.679455	9.330262	10.669738	10.009717	9.990283	30	42
19	45	9.320692	10.679308	9.330417	10.669584	10.009724	9.990276	15	41
20	5	9.320840	10.679160	9.330570	10.669430	10.009730	9.990270	55	40
21	15	9.320987	10.679013	9.330725	10.669275	10.009737	9.990263	45	39
22	30	9.321135	10.678865	9.330879	10.669121	10.009744	9.990256	30	38
23	45	9.321282	10.678718	9.331033	10.668967	10.009751	9.990249	15	37
24	6	9.321430	10.678570	9.331187	10.668813	10.009757	9.990243	54	36
25	15	9.321577	10.678423	9.331341	10.668659	10.009764	9.990236	45	35
26	30	9.321724	10.678276	9.331495	10.668505	10.009771	9.990229	30	34
27	45	9.321871	10.678129	9.331649	10.668351	10.009778	9.990222	15	33
28	7	9.322019	10.677981	9.331803	10.668197	10.009785	9.990215	53	32
29	15	9.322166	10.677834	9.331957	10.668043	10.009791	9.990209	45	31
30	30	9.322313	10.677687	9.332111	10.667889	10.009798	9.990202	30	30
31	45	9.322460	10.677540	9.332265	10.667735	10.009805	9.990195	15	29
32	8	9.322607	10.677393	9.332418	10.667582	10.009812	9.990188	52	28
33	15	9.322753	10.677247	9.332572	10.667428	10.009818	9.990182	45	27
34	30	9.322900	10.677100	9.332726	10.667274	10.009825	9.990175	30	26
35	45	9.323047	10.676953	9.332879	10.667121	10.009832	9.990168	15	25
36	9	9.323194	10.676806	9.333033	10.666967	10.009839	9.990161	51	24
37	15	9.323340	10.676660	9.333186	10.666814	10.009846	9.990154	45	23
38	30	9.323487	10.676513	9.333340	10.666660	10.009852	9.990148	30	22
39	45	9.323634	10.676366	9.333493	10.666507	10.009859	9.990141	15	21
40	10	9.323780	10.676220	9.333646	10.666354	10.009866	9.990134	50	20
41	15	9.323927	10.676073	9.333799	10.666201	10.009873	9.990127	45	19
42	30	9.324073	10.675927	9.333953	10.666047	10.009880	9.990120	30	18
43	45	9.324219	10.675781	9.334106	10.665894	10.009887	9.990113	15	17
44	11	9.324366	10.675634	9.334259	10.665741	10.009893	9.990107	49	16
45	15	9.324512	10.675488	9.334412	10.665588	10.009900	9.990100	45	15
46	30	9.324658	10.675342	9.334565	10.665435	10.009907	9.990093	30	14
47	45	9.324804	10.675196	9.334718	10.665282	10.009914	9.990086	15	13
48	12	9.324950	10.675050	9.334871	10.665129	10.009921	9.990079	48	12
49	15	9.325096	10.674904	9.335024	10.664976	10.009927	9.990073	45	11
50	30	9.325242	10.674758	9.335177	10.664823	10.009934	9.990066	30	10
51	45	9.325388	10.674612	9.335330	10.664670	10.009941	9.990059	15	9
52	13	9.325534	10.674466	9.335482	10.664518	10.009948	9.990052	47	8
53	15	9.325680	10.674320	9.335635	10.664365	10.009955	9.990045	45	7
54	30	9.325826	10.674174	9.335788	10.664212	10.009962	9.990038	30	6
55	45	9.325972	10.674028	9.335940	10.664060	10.009969	9.990031	15	5
56	14	9.326117	10.673883	9.336093	10.663907	10.009975	9.990025	46	4
57	15	9.326263	10.673737	9.336245	10.663755	10.009982	9.990018	45	3
58	30	9.326409	10.673591	9.336398	10.663602	10.009989	9.990011	30	2
59	45	9.326554	10.673446	9.336550	10.663450	10.009996	9.990004	15	1
60	15	9.326700	10.673300	9.336702	10.663298	10.010003	9.989997	45	0
sec.	"	cosec.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
5° 11'.		LOG. SINES, &c.						77 deg.	

0° 49'.		LOG. SINES, &c. (L.)						12 deg.	
sec	min	sine.	coscant.	tangent.	cotangent.	secant.	cosec.	sec.	arc.
0	15	9.326700	10.673300	9.336702	10.663298	10.010003	9.989997	45	60
1	15	9.326845	10.673155	9.336845	10.663155	10.010010	9.989990	45	59
2	30	9.326990	10.673010	9.337007	10.662993	10.010016	9.989984	30	58
3	45	9.327136	10.672864	9.337159	10.662841	10.010023	9.989977	15	57
4	16	9.327281	10.672719	9.337311	10.662689	10.010030	9.989970	44	56
5	15	9.327426	10.672574	9.337463	10.662537	10.010037	9.989963	45	55
6	30	9.327571	10.672429	9.337615	10.662385	10.010044	9.989956	30	54
7	45	9.327717	10.672283	9.337767	10.662233	10.010051	9.989949	15	53
8	17	9.327862	10.672138	9.337919	10.662081	10.010058	9.989942	43	52
9	15	9.328007	10.671993	9.338071	10.661929	10.010065	9.989935	45	51
10	30	9.328152	10.671848	9.338223	10.661777	10.010071	9.989929	30	50
11	45	9.328297	10.671703	9.338375	10.661626	10.010078	9.989922	15	49
12	18	9.328442	10.671558	9.338527	10.661473	10.010085	9.989915	42	48
13	15	9.328586	10.671414	9.338678	10.661322	10.010092	9.989908	45	47
14	30	9.328731	10.671269	9.338830	10.661170	10.010099	9.989901	30	46
15	45	9.328876	10.671124	9.338982	10.661018	10.010106	9.989894	15	45
16	19	9.329021	10.670979	9.339133	10.660867	10.010113	9.989887	41	44
17	15	9.329165	10.670835	9.339285	10.660715	10.010120	9.989880	45	43
18	30	9.329310	10.670690	9.339436	10.660564	10.010127	9.989873	30	42
19	45	9.329454	10.670546	9.339588	10.660412	10.010133	9.989867	15	41
20	20	9.329599	10.670401	9.339739	10.660261	10.010140	9.989860	40	40
21	15	9.329743	10.670257	9.339890	10.660110	10.010147	9.989853	45	39
22	30	9.329887	10.670113	9.340042	10.659958	10.010154	9.989846	30	38
23	45	9.330032	10.669968	9.340193	10.659807	10.010161	9.989839	15	37
24	21	9.330176	10.669824	9.340344	10.659656	10.010168	9.989832	39	36
25	15	9.330320	10.669680	9.340495	10.659505	10.010175	9.989825	45	35
26	30	9.330464	10.669536	9.340646	10.659354	10.010182	9.989818	30	34
27	45	9.330609	10.669391	9.340797	10.659203	10.010189	9.989811	15	33
28	22	9.330753	10.669247	9.340948	10.659052	10.010196	9.989804	38	32
29	15	9.330897	10.669103	9.341099	10.658901	10.010203	9.989797	45	31
30	30	9.331041	10.668959	9.341250	10.658750	10.010210	9.989790	30	30
31	45	9.331185	10.668815	9.341401	10.658599	10.010216	9.989784	15	29
32	23	9.331328	10.668672	9.341552	10.658448	10.010223	9.989777	37	28
33	15	9.331472	10.668528	9.341703	10.658297	10.010230	9.989770	45	27
34	30	9.331616	10.668384	9.341853	10.658147	10.010237	9.989763	30	26
35	45	9.331760	10.668240	9.342004	10.657996	10.010244	9.989756	15	25
36	24	9.331903	10.668097	9.342155	10.657845	10.010251	9.989749	36	24
37	15	9.332047	10.667953	9.342306	10.657695	10.010258	9.989742	45	23
38	30	9.332191	10.667809	9.342456	10.657544	10.010265	9.989735	30	22
39	45	9.332334	10.667666	9.342606	10.657394	10.010272	9.989728	15	21
40	25	9.332478	10.667522	9.342757	10.657243	10.010279	9.989721	35	20
41	15	9.332621	10.667379	9.342907	10.657093	10.010286	9.989714	45	19
42	30	9.332764	10.667236	9.343057	10.656943	10.010293	9.989707	30	18
43	45	9.332908	10.667092	9.343208	10.656792	10.010300	9.989700	15	17
44	26	9.333051	10.666949	9.343358	10.656642	10.010307	9.989693	34	16
45	15	9.333194	10.666806	9.343508	10.656492	10.010314	9.989686	45	15
46	30	9.333337	10.666663	9.343658	10.656342	10.010321	9.989679	30	14
47	45	9.333481	10.666519	9.343808	10.656192	10.010328	9.989672	15	13
48	27	9.333624	10.666376	9.343958	10.656042	10.010335	9.989665	33	12
49	15	9.333767	10.666233	9.344108	10.655892	10.010342	9.989658	45	11
50	30	9.333910	10.666090	9.344258	10.655742	10.010349	9.989651	30	10
51	45	9.334053	10.665947	9.344408	10.655592	10.010356	9.989644	15	9
52	28	9.334195	10.665805	9.344558	10.655442	10.010363	9.989637	32	8
53	15	9.334338	10.665662	9.344708	10.655292	10.010370	9.989630	45	7
54	30	9.334481	10.665519	9.344858	10.655142	10.010377	9.989623	30	6
55	45	9.334624	10.665376	9.345007	10.654993	10.010384	9.989616	15	5
56	29	9.334766	10.665234	9.345157	10.654843	10.010391	9.989609	31	4
57	15	9.334909	10.665091	9.345307	10.654693	10.010398	9.989602	45	3
58	30	9.335052	10.664948	9.345456	10.654544	10.010405	9.989595	30	2
59	45	9.335194	10.664806	9.345606	10.654394	10.010412	9.989588	15	1
60	30	9.335337	10.664663	9.345755	10.654245	10.010419	9.989581	30	0
sec	min	sine.	coscant.	tangent.	cotangent.	secant.	cosec.	sec.	arc.
5° 10'.		LOG. SINES, &c.						77 deg.	

0° 50'		LOG. SINES, &c. (L)						12 deg.	
sec.	min.	sine.	coscant.	tangent.	cotangent.	secant.	cosec.	sec.	min.
0	30	9.335337	10.664663	9.345755	10.654245	10.010419	9.989581	30	60
1	15	9.335479	10.664521	9.345905	10.654095	10.010426	9.989574	45	45
2	30	9.335622	10.664378	9.346054	10.653946	10.010433	9.989567	30	56
3	45	9.335764	10.664236	9.346203	10.653797	10.010440	9.989560	15	57
4	31	9.335906	10.664094	9.346353	10.653647	10.010447	9.989553	29	56
5	15	9.336048	10.663952	9.346502	10.653498	10.010454	9.989546	45	55
6	30	9.336191	10.663809	9.346651	10.653349	10.010461	9.989539	30	54
7	45	9.336333	10.663667	9.346800	10.653200	10.010468	9.989532	15	53
8	32	9.336475	10.663525	9.346949	10.653051	10.010475	9.989525	28	52
9	15	9.336617	10.663383	9.347098	10.652902	10.010482	9.989518	45	51
10	30	9.336759	10.663241	9.347247	10.652753	10.010489	9.989511	30	50
11	45	9.336901	10.663099	9.347396	10.652604	10.010496	9.989504	15	49
12	33	9.337043	10.662957	9.347545	10.652455	10.010503	9.989497	27	48
13	15	9.337185	10.662815	9.347694	10.652306	10.010510	9.989490	45	47
14	30	9.337327	10.662674	9.347843	10.652157	10.010517	9.989483	30	46
15	45	9.337468	10.662532	9.347992	10.652008	10.010524	9.989476	15	45
16	34	9.337610	10.662390	9.348141	10.651859	10.010531	9.989469	26	44
17	15	9.337751	10.662249	9.348289	10.651711	10.010538	9.989462	45	43
18	30	9.337893	10.662107	9.348438	10.651562	10.010545	9.989455	30	42
19	45	9.338035	10.661965	9.348587	10.651413	10.010552	9.989448	15	41
20	35	9.338176	10.661824	9.348735	10.651265	10.010559	9.989441	25	40
21	15	9.338318	10.661682	9.348884	10.651116	10.010566	9.989434	45	39
22	30	9.338459	10.661541	9.349032	10.650968	10.010573	9.989427	30	38
23	45	9.338600	10.661400	9.349181	10.650819	10.010580	9.989420	15	37
24	36	9.338742	10.661258	9.349329	10.650671	10.010587	9.989413	24	36
25	15	9.338883	10.661117	9.349477	10.650523	10.010594	9.989406	45	35
26	30	9.339024	10.660976	9.349626	10.650374	10.010601	9.989399	30	34
27	45	9.339165	10.660835	9.349774	10.650226	10.010608	9.989392	15	33
28	37	9.339306	10.660694	9.349922	10.650078	10.010616	9.989384	23	32
29	15	9.339448	10.660552	9.350070	10.649930	10.010623	9.989377	45	31
30	30	9.339589	10.660411	9.350218	10.649782	10.010630	9.989370	30	30
31	45	9.339730	10.660270	9.350366	10.649634	10.010637	9.989363	15	29
32	38	9.339871	10.660129	9.350514	10.649486	10.010644	9.989356	22	28
33	15	9.340011	10.659989	9.350662	10.649338	10.010651	9.989349	45	27
34	30	9.340152	10.659848	9.350810	10.649190	10.010658	9.989342	30	26
35	45	9.340293	10.659707	9.350958	10.649042	10.010665	9.989335	15	25
36	39	9.340434	10.659566	9.351106	10.648894	10.010672	9.989328	21	24
37	15	9.340574	10.659426	9.351254	10.648746	10.010679	9.989321	45	23
38	30	9.340715	10.659285	9.351401	10.648599	10.010686	9.989314	30	22
39	45	9.340856	10.659144	9.351549	10.648451	10.010693	9.989307	15	21
40	40	9.340996	10.659004	9.351697	10.648303	10.010701	9.989299	20	20
41	15	9.341137	10.658863	9.351844	10.648156	10.010708	9.989292	45	19
42	30	9.341277	10.658723	9.351992	10.648008	10.010715	9.989285	30	18
43	45	9.341418	10.658582	9.352139	10.647861	10.010722	9.989278	15	17
44	41	9.341558	10.658442	9.352287	10.647713	10.010729	9.989271	19	16
45	15	9.341698	10.658302	9.352434	10.647566	10.010736	9.989264	45	15
46	30	9.341839	10.658161	9.352582	10.647418	10.010743	9.989257	30	14
47	45	9.341979	10.658021	9.352729	10.647271	10.010750	9.989250	15	13
48	42	9.342119	10.657881	9.352876	10.647124	10.010757	9.989243	18	12
49	15	9.342259	10.657741	9.353024	10.646976	10.010765	9.989235	45	11
50	30	9.342399	10.657601	9.353171	10.646829	10.010772	9.989228	30	10
51	45	9.342539	10.657461	9.353318	10.646682	10.010779	9.989221	15	9
52	43	9.342679	10.657321	9.353465	10.646535	10.010786	9.989214	17	8
53	15	9.342819	10.657181	9.353612	10.646388	10.010793	9.989207	45	7
54	30	9.342959	10.657041	9.353759	10.646241	10.010800	9.989200	30	6
55	45	9.343099	10.656901	9.353906	10.646094	10.010807	9.989193	15	5
56	44	9.343239	10.656761	9.354053	10.645947	10.010814	9.989186	16	4
57	15	9.343378	10.656622	9.354200	10.645800	10.010822	9.989178	45	3
58	30	9.343518	10.656482	9.354347	10.645653	10.010829	9.989171	30	2
59	45	9.343658	10.656342	9.354493	10.645506	10.010836	9.989164	15	1
60	45	9.343797	10.656203	9.354640	10.645360	10.010843	9.989157	15	0
sec.	min.	sine.	coscant.	tangent.	cotangent.	secant.	cosec.	sec.	min.
5° 50'		LOG. SINES, &c.						77 deg.	

0° 51'.		LOG. SINES, &c. (L.)						12 deg.	
sec.	"	sine.	coscant.	tangent.	cotangent.	secant.	cosec.	"	sec.
0	45	9.343797	10.656203	9.354640	10.645360	10.010843	9.989157	15	60
1	15	9.343937	10.656063	9.354787	10.645213	10.010850	9.989150	45	59
2	30	9.344076	10.655924	9.354934	10.645066	10.010857	9.989143	30	58
3	45	9.344216	10.655784	9.355080	10.644920	10.010864	9.989136	15	57
4	46	9.344355	10.655645	9.355227	10.644773	10.010872	9.989128	14	56
5	15	9.344495	10.655505	9.355373	10.644627	10.010879	9.989121	45	55
6	30	9.344634	10.655366	9.355520	10.644480	10.010886	9.989114	30	54
7	45	9.344773	10.655227	9.355666	10.644334	10.010893	9.989107	15	53
8	47	9.344912	10.655088	9.355813	10.644187	10.010900	9.989100	13	52
9	15	9.345052	10.654948	9.355959	10.644041	10.010907	9.989093	45	51
10	30	9.345191	10.654809	9.356105	10.643895	10.010915	9.989085	30	50
11	45	9.345330	10.654670	9.356251	10.643749	10.010922	9.989078	15	49
12	48	9.345469	10.654531	9.356398	10.643602	10.010929	9.989071	12	48
13	15	9.345608	10.654392	9.356544	10.643456	10.010936	9.989064	45	47
14	30	9.345747	10.654253	9.356690	10.643310	10.010943	9.989057	30	46
15	45	9.345886	10.654114	9.356836	10.643164	10.010950	9.989050	15	45
16	49	9.346024	10.653976	9.356982	10.643018	10.010958	9.989042	11	44
17	15	9.346163	10.653837	9.357128	10.642872	10.010965	9.989035	45	43
18	30	9.346302	10.653698	9.357274	10.642726	10.010972	9.989028	30	42
19	45	9.346441	10.653559	9.357420	10.642580	10.010979	9.989021	15	41
20	50	9.346579	10.653421	9.357566	10.642434	10.010986	9.989014	10	40
21	15	9.346718	10.653282	9.357712	10.642288	10.010994	9.989006	45	39
22	30	9.346857	10.653143	9.357857	10.642143	10.011001	9.988999	30	38
23	45	9.346995	10.653005	9.358003	10.641997	10.011008	9.988992	15	37
24	51	9.347134	10.652866	9.358149	10.641851	10.011015	9.988985	9	36
25	15	9.347272	10.652728	9.358294	10.641706	10.011022	9.988978	45	35
26	30	9.347410	10.652590	9.358440	10.641560	10.011030	9.988970	30	34
27	45	9.347549	10.652451	9.358585	10.641415	10.011037	9.988963	15	33
28	52	9.347687	10.652313	9.358731	10.641269	10.011044	9.988956	8	32
29	15	9.347825	10.652175	9.358876	10.641124	10.011051	9.988949	45	31
30	30	9.347963	10.652037	9.359022	10.640979	10.011058	9.988942	30	30
31	45	9.348102	10.651898	9.359167	10.640833	10.011066	9.988934	15	29
32	53	9.348240	10.651760	9.359313	10.640687	10.011073	9.988927	7	28
33	15	9.348378	10.651622	9.359458	10.640542	10.011080	9.988920	45	27
34	30	9.348516	10.651484	9.359603	10.640397	10.011087	9.988913	30	26
35	45	9.348654	10.651346	9.359748	10.640252	10.011095	9.988905	15	25
36	54	9.348792	10.651208	9.359893	10.640107	10.011102	9.988898	6	24
37	15	9.348930	10.651070	9.360039	10.639961	10.011109	9.988891	45	23
38	30	9.349067	10.650933	9.360184	10.639816	10.011116	9.988884	30	22
39	45	9.349205	10.650795	9.360329	10.639671	10.011124	9.988876	15	21
40	55	9.349343	10.650657	9.360474	10.639526	10.011131	9.988869	5	20
41	15	9.349481	10.650519	9.360619	10.639381	10.011138	9.988862	45	19
42	30	9.349618	10.650382	9.360763	10.639237	10.011145	9.988855	30	18
43	45	9.349756	10.650244	9.360908	10.639092	10.011153	9.988847	15	17
44	56	9.349893	10.650107	9.361053	10.638947	10.011160	9.988840	4	16
45	15	9.350031	10.649969	9.361198	10.638802	10.011167	9.988833	45	15
46	30	9.350168	10.649832	9.361343	10.638657	10.011174	9.988826	30	14
47	45	9.350306	10.649694	9.361487	10.638513	10.011182	9.988818	15	13
48	57	9.350443	10.649557	9.361632	10.638368	10.011189	9.988811	3	12
49	15	9.350580	10.649420	9.361776	10.638224	10.011196	9.988804	45	11
50	30	9.350718	10.649282	9.361921	10.638079	10.011203	9.988797	30	10
51	45	9.350855	10.649145	9.362065	10.637935	10.011211	9.988789	15	9
52	58	9.350992	10.649008	9.362210	10.637790	10.011218	9.988782	2	8
53	15	9.351129	10.648871	9.362354	10.637646	10.011225	9.988775	45	7
54	30	9.351266	10.648734	9.362499	10.637501	10.011232	9.988768	30	6
55	45	9.351403	10.648597	9.362643	10.637357	10.011240	9.988760	15	5
56	59	9.351540	10.648460	9.362787	10.637213	10.011247	9.988753	1	4
57	15	9.351677	10.648323	9.362932	10.637068	10.011254	9.988746	45	3
58	30	9.351814	10.648186	9.363076	10.636924	10.011262	9.988738	30	2
59	45	9.351951	10.648049	9.363220	10.636780	10.011269	9.988731	15	1
60	60	9.352088	10.647912	9.363364	10.636636	10.011276	9.988724	0	0
sec.	"	cosine.	secant.	cotangent.	tangent.	coscant.	sine.	"	sec.
5° 51'.		LOG. SINES, &c.						77 deg.	

0° 52'		LOG. SINES, &c. (L)						13 deg.	
		sine.	coscant.	tangent.	cotangent.	secant.	cosec.		sec.
0	0	9.352088	10.647912	9.353364	10.636636	10.011276	9.988724	60	60
1	15	9.352225	10.647775	9.363508	10.636492	10.011283	9.988717	45	59
2	30	9.352361	10.647639	9.363652	10.636348	10.011291	9.988709	30	58
3	45	9.352498	10.647502	9.363796	10.636204	10.011298	9.988702	15	57
4	1	9.352635	10.647365	9.363940	10.636060	10.011305	9.988695	59	56
5	15	9.352771	10.647229	9.364084	10.635916	10.011313	9.988687	45	55
6	30	9.352908	10.647092	9.364228	10.635772	10.011320	9.988680	30	54
7	45	9.353044	10.646956	9.364372	10.635628	10.011327	9.988673	15	53
8	2	9.353181	10.646819	9.364515	10.635485	10.011335	9.988665	58	52
9	15	9.353317	10.646683	9.364659	10.635341	10.011342	9.988658	45	51
10	30	9.353454	10.646546	9.364803	10.635197	10.011349	9.988651	30	50
11	45	9.353590	10.646410	9.364946	10.635054	10.011356	9.988644	15	49
12	3	9.353726	10.646274	9.365090	10.634910	10.011364	9.988636	57	48
13	15	9.353863	10.646137	9.365234	10.634766	10.011371	9.988629	45	47
14	30	9.353999	10.646001	9.365377	10.634623	10.011378	9.988622	30	46
15	45	9.354135	10.645865	9.365521	10.634479	10.011386	9.988614	15	45
16	4	9.354271	10.645729	9.365664	10.634336	10.011393	9.988607	56	44
17	15	9.354407	10.645593	9.365807	10.634193	10.011400	9.988600	45	43
18	30	9.354543	10.645457	9.365951	10.634049	10.011408	9.988592	30	42
19	45	9.354679	10.645321	9.366094	10.633906	10.011415	9.988585	15	41
20	5	9.354815	10.645185	9.366237	10.633763	10.011422	9.988578	55	40
21	15	9.354951	10.645049	9.366381	10.633619	10.011430	9.988570	45	39
22	30	9.355087	10.644913	9.366524	10.633476	10.011437	9.988563	30	38
23	45	9.355222	10.644778	9.366667	10.633333	10.011444	9.988556	15	37
24	6	9.355358	10.644642	9.366810	10.633190	10.011452	9.988548	54	36
25	15	9.355494	10.644506	9.366953	10.633047	10.011459	9.988541	45	35
26	30	9.355630	10.644370	9.367096	10.632904	10.011467	9.988533	30	34
27	45	9.355765	10.644235	9.367239	10.632761	10.011474	9.988526	15	33
28	7	9.355901	10.644099	9.367382	10.632618	10.011481	9.988519	53	32
29	15	9.356036	10.643964	9.367525	10.632475	10.011489	9.988511	45	31
30	30	9.356172	10.643828	9.367668	10.632332	10.011496	9.988504	30	30
31	45	9.356307	10.643693	9.367810	10.632190	10.011503	9.988497	15	29
32	8	9.356443	10.643557	9.367953	10.632047	10.011511	9.988489	52	28
33	15	9.356578	10.643422	9.368096	10.631904	10.011518	9.988482	45	27
34	30	9.356713	10.643287	9.368239	10.631761	10.011525	9.988475	30	26
35	45	9.356848	10.643152	9.368381	10.631619	10.011533	9.988467	15	25
36	9	9.356984	10.643016	9.368524	10.631476	10.011540	9.988460	51	24
37	15	9.357119	10.642881	9.368666	10.631334	10.011548	9.988452	45	23
38	30	9.357254	10.642746	9.368809	10.631191	10.011555	9.988445	30	22
39	45	9.357389	10.642611	9.368951	10.631049	10.011562	9.988438	15	21
40	10	9.357524	10.642476	9.369094	10.630906	10.011570	9.988430	50	20
41	15	9.357659	10.642341	9.369236	10.630764	10.011577	9.988423	45	19
42	30	9.357794	10.642206	9.369378	10.630622	10.011584	9.988416	30	18
43	45	9.357929	10.642071	9.369521	10.630479	10.011592	9.988408	15	17
44	11	9.358064	10.641936	9.369663	10.630337	10.011599	9.988401	49	16
45	15	9.358198	10.641802	9.369805	10.630195	10.011607	9.988393	45	15
46	30	9.358333	10.641667	9.369947	10.630053	10.011614	9.988386	30	14
47	45	9.358468	10.641532	9.370089	10.629911	10.011621	9.988379	15	13
48	12	9.358603	10.641397	9.370231	10.629769	10.011629	9.988371	48	12
49	15	9.358737	10.641263	9.370374	10.629626	10.011636	9.988364	45	11
50	30	9.358872	10.641128	9.370516	10.629484	10.011644	9.988356	30	10
51	45	9.359006	10.640994	9.370657	10.629343	10.011651	9.988349	15	9
52	13	9.359141	10.640859	9.370799	10.629201	10.011659	9.988341	47	8
53	15	9.359275	10.640725	9.370941	10.629059	10.011666	9.988334	45	7
54	30	9.359410	10.640590	9.371083	10.628917	10.011673	9.988327	30	6
55	45	9.359544	10.640456	9.371225	10.628775	10.011681	9.988319	15	5
56	14	9.359678	10.640322	9.371367	10.628633	10.011688	9.988312	46	4
57	15	9.359813	10.640187	9.371508	10.628492	10.011696	9.988304	45	3
58	30	9.359947	10.640053	9.371650	10.628350	10.011703	9.988297	30	2
59	45	9.360081	10.639919	9.371792	10.628208	10.011711	9.988289	15	1
60	15	9.360215	10.639785	9.371933	10.628066	10.011718	9.988282	45	0
sec.		cosec.	secant.	tangent.	cotangent.	secant.	sine.		sec.
52° 7'		LOG. SINES, &c.						76 deg.	

0° 53'.		LOG. SINES, &c. (t)						15 deg.	
sec.	"	sine.	coscant.	tangent.	cotangent.	secant.	cosec.	"	sec.
0	15	9.360215	10.639785	9.371933	10.628067	10.011718	9.988282	45	60
1	15	9.360349	10.639651	9.372075	10.627925	10.011725	9.988275	45	59
2	30	9.360483	10.639517	9.372216	10.627784	10.011733	9.988267	30	58
3	45	9.360617	10.639383	9.372358	10.627642	10.011740	9.988259	15	57
4	16	9.360751	10.639249	9.372499	10.627501	10.011748	9.988252	44	56
5	15	9.360885	10.639115	9.372641	10.627359	10.011755	9.988245	45	55
6	30	9.361019	10.638981	9.372782	10.627218	10.011763	9.988237	30	54
7	45	9.361153	10.638847	9.372923	10.627077	10.011770	9.988230	15	53
8	17	9.361287	10.638713	9.373064	10.626936	10.011778	9.988222	43	52
9	15	9.361421	10.638579	9.373206	10.626794	10.011785	9.988215	45	51
10	30	9.361554	10.638446	9.373347	10.626653	10.011792	9.988208	30	50
11	45	9.361688	10.638312	9.373488	10.626512	10.011800	9.988200	15	49
12	18	9.361822	10.638178	9.373629	10.626371	10.011807	9.988193	42	48
13	15	9.361955	10.638045	9.373770	10.626230	10.011815	9.988185	45	47
14	30	9.362089	10.637911	9.373911	10.626089	10.011822	9.988178	30	46
15	45	9.362222	10.637778	9.374052	10.625948	10.011830	9.988170	15	45
16	19	9.362356	10.637644	9.374193	10.625807	10.011837	9.988163	41	44
17	15	9.362489	10.637511	9.374334	10.625666	10.011845	9.988155	45	43
18	30	9.362623	10.637377	9.374475	10.625525	10.011852	9.988148	30	42
19	45	9.362756	10.637244	9.374616	10.625384	10.011860	9.988140	15	41
20	20	9.362889	10.637111	9.374756	10.625244	10.011867	9.988133	40	40
21	15	9.363022	10.636978	9.374897	10.625103	10.011875	9.988125	45	39
22	30	9.363156	10.636844	9.375038	10.624962	10.011882	9.988118	30	38
23	45	9.363289	10.636711	9.375179	10.624822	10.011890	9.988110	15	37
24	21	9.363422	10.636578	9.375319	10.624681	10.011897	9.988103	39	36
25	15	9.363555	10.636445	9.375459	10.624541	10.011905	9.988095	45	35
26	30	9.363688	10.636312	9.375600	10.624400	10.011912	9.988088	30	34
27	45	9.363821	10.636179	9.375740	10.624260	10.011920	9.988080	15	33
28	22	9.363954	10.636046	9.375881	10.624119	10.011927	9.988073	38	32
29	15	9.364087	10.635913	9.376021	10.623979	10.011935	9.988065	45	31
30	30	9.364220	10.635780	9.376162	10.623838	10.011942	9.988058	30	30
31	45	9.364352	10.635648	9.376302	10.623698	10.011950	9.988050	15	29
32	23	9.364485	10.635515	9.376442	10.623558	10.011957	9.988043	37	28
33	15	9.364618	10.635382	9.376583	10.623417	10.011965	9.988035	45	27
34	30	9.364751	10.635249	9.376723	10.623277	10.011972	9.988028	30	26
35	45	9.364883	10.635117	9.376863	10.623137	10.011980	9.988020	15	25
36	24	9.365016	10.634984	9.377003	10.622997	10.011987	9.988013	36	24
37	15	9.365148	10.634852	9.377143	10.622857	10.011995	9.988005	45	23
38	30	9.365281	10.634719	9.377283	10.622717	10.012002	9.987998	30	22
39	45	9.365413	10.634587	9.377423	10.622577	10.012010	9.987990	15	21
40	25	9.365546	10.634454	9.377563	10.622437	10.012017	9.987983	35	20
41	15	9.365678	10.634322	9.377703	10.622297	10.012025	9.987975	45	19
42	30	9.365810	10.634190	9.377843	10.622157	10.012032	9.987968	30	18
43	45	9.365943	10.634057	9.377983	10.622017	10.012040	9.987960	15	17
44	26	9.366075	10.633925	9.378122	10.621878	10.012048	9.987952	34	16
45	15	9.366207	10.633793	9.378262	10.621738	10.012055	9.987945	45	15
46	30	9.366339	10.633661	9.378402	10.621598	10.012063	9.987937	30	14
47	45	9.366471	10.633529	9.378542	10.621458	10.012070	9.987930	15	13
48	27	9.366604	10.633396	9.378681	10.621319	10.012078	9.987922	33	12
49	15	9.366736	10.633264	9.378821	10.621179	10.012085	9.987915	45	11
50	30	9.366868	10.633132	9.378960	10.621040	10.012093	9.987907	30	10
51	45	9.367000	10.633000	9.379100	10.620900	10.012100	9.987900	15	9
52	28	9.367131	10.632869	9.379239	10.620761	10.012108	9.987892	32	8
53	15	9.367263	10.632737	9.379379	10.620621	10.012116	9.987884	45	7
54	30	9.367395	10.632605	9.379518	10.620482	10.012123	9.987877	30	6
55	45	9.367527	10.632473	9.379658	10.620342	10.012131	9.987869	15	5
56	29	9.367659	10.632341	9.379797	10.620203	10.012138	9.987862	31	4
57	15	9.367790	10.632210	9.379936	10.620064	10.012146	9.987854	45	3
58	30	9.367922	10.632078	9.380075	10.619925	10.012153	9.987847	30	2
59	45	9.368054	10.631946	9.380215	10.619785	10.012161	9.987839	15	1
60	30	9.368185	10.631815	9.380354	10.619646	10.012169	9.987831	30	0
sec.	"	cosec.	secant.	cotangent.	tangent.	coscant.	sine.	"	sec.
54° 53'.		LOG. SINES, &c.						75 deg.	

0° 54'		LOG. SINES, &c. (t.)						13 deg.	
deg.	'	sine.	coscant.	tangent	cotangent.	secant.	comse.	deg.	'
0	30	9.368185	10.631815	9.380364	10.619636	10.012169	9.987831	30	60
1	15	9.368317	10.631683	9.380493	10.619507	10.012176	9.987824	45	59
2	30	9.368448	10.631552	9.380632	10.619368	10.012184	9.987816	30	58
3	45	9.368580	10.631420	9.380771	10.619229	10.012191	9.987809	15	57
4	31	9.368711	10.631289	9.380910	10.619090	10.012199	9.987801	29	56
5	15	9.368842	10.631158	9.381049	10.618951	10.012206	9.987794	45	55
6	30	9.368974	10.631026	9.381188	10.618812	10.012214	9.987786	30	54
7	45	9.369105	10.630895	9.381327	10.618673	10.012222	9.987778	15	53
8	32	9.369236	10.630764	9.381465	10.618535	10.012229	9.987771	28	52
9	15	9.369367	10.630633	9.381604	10.618396	10.012237	9.987763	45	51
10	30	9.369499	10.630501	9.381743	10.618257	10.012244	9.987756	30	50
11	45	9.369630	10.630370	9.381882	10.618118	10.012252	9.987748	15	49
12	33	9.369761	10.630239	9.382020	10.617980	10.012260	9.987740	27	48
13	15	9.369892	10.630108	9.382159	10.617841	10.012267	9.987733	45	47
14	30	9.370023	10.629977	9.382298	10.617702	10.012275	9.987725	30	46
15	45	9.370154	10.629846	9.382436	10.617564	10.012283	9.987717	15	45
16	34	9.370285	10.629715	9.382575	10.617425	10.012290	9.987710	26	44
17	15	9.370416	10.629584	9.382713	10.617287	10.012298	9.987702	45	43
18	30	9.370546	10.629454	9.382852	10.617148	10.012305	9.987695	30	42
19	45	9.370677	10.629323	9.382990	10.617010	10.012313	9.987687	15	41
20	35	9.370808	10.629192	9.383128	10.616872	10.012321	9.987679	25	40
21	15	9.370939	10.629061	9.383267	10.616733	10.012328	9.987672	45	39
22	30	9.371069	10.628931	9.383405	10.616595	10.012336	9.987664	30	38
23	45	9.371200	10.628800	9.383543	10.616457	10.012344	9.987656	15	37
24	36	9.371330	10.628670	9.383682	10.616318	10.012351	9.987649	24	36
25	15	9.371461	10.628539	9.383820	10.616180	10.012359	9.987641	45	35
26	30	9.371591	10.628409	9.383958	10.616042	10.012366	9.987634	30	34
27	45	9.371722	10.628278	9.384096	10.615904	10.012374	9.987626	15	33
28	37	9.371852	10.628148	9.384234	10.615766	10.012382	9.987619	23	32
29	15	9.371983	10.628017	9.384372	10.615628	10.012389	9.987611	45	31
30	30	9.372113	10.627887	9.384510	10.615490	10.012397	9.987603	30	30
31	45	9.372243	10.627757	9.384648	10.615352	10.012405	9.987595	15	29
32	38	9.372373	10.627627	9.384786	10.615214	10.012412	9.987588	22	28
33	15	9.372504	10.627496	9.384924	10.615076	10.012420	9.987580	45	27
34	30	9.372634	10.627366	9.385061	10.614939	10.012428	9.987572	30	26
35	45	9.372764	10.627236	9.385199	10.614801	10.012435	9.987565	15	25
36	39	9.372894	10.627106	9.385337	10.614663	10.012443	9.987557	21	24
37	15	9.373024	10.626976	9.385475	10.614525	10.012451	9.987549	45	23
38	30	9.373154	10.626846	9.385612	10.614388	10.012458	9.987542	30	22
39	45	9.373284	10.626716	9.385750	10.614250	10.012466	9.987534	15	21
40	40	9.373414	10.626586	9.385888	10.614112	10.012474	9.987526	20	20
41	15	9.373544	10.626456	9.386025	10.613975	10.012481	9.987519	45	19
42	30	9.373674	10.626326	9.386163	10.613837	10.012489	9.987511	30	18
43	45	9.373803	10.626197	9.386300	10.613700	10.012497	9.987503	15	17
44	41	9.373933	10.626067	9.386438	10.613562	10.012505	9.987495	19	16
45	15	9.374063	10.625937	9.386575	10.613425	10.012512	9.987488	45	15
46	30	9.374192	10.625809	9.386712	10.613288	10.012520	9.987480	30	14
47	45	9.374322	10.625678	9.386850	10.613150	10.012528	9.987472	15	13
48	42	9.374452	10.625548	9.386987	10.613013	10.012535	9.987465	18	12
49	15	9.374581	10.625419	9.387124	10.612876	10.012543	9.987457	45	11
50	30	9.374711	10.625289	9.387261	10.612739	10.012551	9.987449	30	10
51	45	9.374840	10.625160	9.387398	10.612602	10.012558	9.987442	15	9
52	43	9.374970	10.625030	9.387536	10.612464	10.012566	9.987434	17	8
53	15	9.375099	10.624901	9.387673	10.612327	10.012574	9.987426	45	7
54	30	9.375228	10.624772	9.387810	10.612190	10.012582	9.987418	30	6
55	45	9.375358	10.624642	9.387947	10.612053	10.012589	9.987411	15	5
56	44	9.375487	10.624513	9.388084	10.611916	10.012597	9.987403	16	4
57	15	9.375616	10.624384	9.388221	10.611779	10.012605	9.987395	45	3
58	30	9.375745	10.624255	9.388357	10.611643	10.012612	9.987388	30	2
59	45	9.375874	10.624126	9.388494	10.611506	10.012620	9.987380	15	1
60	45	9.376003	10.623997	9.388631	10.611369	10.012628	9.987372	15	0
deg.	'	sine.	coscant.	tangent	cotangent.	secant.	comse.	deg.	'
5° 5'		LOG. SINES, &c.						76 deg.	

0° 55'				LOG. SINES, &c. (1)				13 deg.			
sec.	"	sine.	coscant.	tangent.	cotangent.	secant.	cosec.	"	"	sec.	min.
0	45	9.376003	10.623997	9.388631	10.611369	10.012628	9.987372	15		60	
1	15	9.376132	10.623868	9.388768	10.611232	10.012636	9.987364	45		59	
2	30	9.376261	10.623739	9.388905	10.611095	10.012643	9.987357	30		58	
3	45	9.376390	10.623610	9.389041	10.610959	10.012651	9.987349	15		57	
4	46	9.376519	10.623481	9.389178	10.610822	10.012659	9.987341	14		56	
5	15	9.376648	10.623352	9.389315	10.610685	10.012667	9.987333	45		55	
6	30	9.376777	10.623223	9.389451	10.610549	10.012674	9.987326	30		54	
7	45	9.376906	10.623094	9.389588	10.610412	10.012682	9.987318	15		53	
8	47	9.377035	10.622965	9.389724	10.610276	10.012690	9.987310	13		52	
9	15	9.377163	10.622837	9.389861	10.610139	10.012698	9.987302	45		51	
10	30	9.377292	10.622708	9.389997	10.610003	10.012705	9.987295	30		50	
11	45	9.377421	10.622579	9.390134	10.609866	10.012713	9.987287	15		49	
12	48	9.377549	10.622451	9.390270	10.609730	10.012721	9.987279	12		48	
13	15	9.377678	10.622322	9.390406	10.609594	10.012729	9.987271	45		47	
14	30	9.377806	10.622194	9.390543	10.609457	10.012736	9.987264	30		46	
15	45	9.377935	10.622065	9.390679	10.609321	10.012744	9.987256	15		45	
16	49	9.378063	10.621937	9.390815	10.609185	10.012752	9.987248	11		44	
17	15	9.378192	10.621808	9.390951	10.609049	10.012760	9.987240	45		43	
18	30	9.378320	10.621680	9.391087	10.608913	10.012767	9.987233	30		42	
19	45	9.378448	10.621552	9.391223	10.608777	10.012775	9.987225	15		41	
20	50	9.378577	10.621423	9.391359	10.608641	10.012783	9.987217	10		40	
21	15	9.378705	10.621295	9.391495	10.608505	10.012791	9.987209	45		39	
22	30	9.378833	10.621167	9.391631	10.608369	10.012798	9.987202	30		38	
23	45	9.378961	10.621039	9.391767	10.608233	10.012806	9.987194	15		37	
24	51	9.379089	10.620911	9.391903	10.608097	10.012814	9.987186	9		36	
25	15	9.379217	10.620783	9.392039	10.607961	10.012822	9.987178	45		35	
26	30	9.379345	10.620655	9.392175	10.607825	10.012830	9.987170	30		34	
27	45	9.379473	10.620527	9.392311	10.607689	10.012837	9.987163	15		33	
28	52	9.379601	10.620399	9.392447	10.607553	10.012845	9.987155	8		32	
29	15	9.379729	10.620271	9.392582	10.607418	10.012853	9.987147	45		31	
30	30	9.379857	10.620143	9.392718	10.607282	10.012861	9.987139	30		30	
31	45	9.379985	10.620015	9.392854	10.607146	10.012869	9.987131	15		29	
32	53	9.380113	10.619887	9.392989	10.607011	10.012876	9.987124	7		28	
33	15	9.380241	10.619759	9.393125	10.606875	10.012884	9.987116	45		27	
34	30	9.380368	10.619632	9.393260	10.606740	10.012892	9.987108	30		26	
35	45	9.380496	10.619504	9.393396	10.606604	10.012900	9.987100	15		25	
36	54	9.380624	10.619376	9.393531	10.606469	10.012908	9.987092	6		24	
37	15	9.380751	10.619249	9.393667	10.606333	10.012915	9.987085	45		23	
38	30	9.380879	10.619121	9.393802	10.606198	10.012923	9.987077	30		22	
39	45	9.381006	10.618994	9.393937	10.606063	10.012931	9.987069	15		21	
40	55	9.381134	10.618866	9.394073	10.605927	10.012939	9.987061	5		20	
41	15	9.381261	10.618739	9.394208	10.605792	10.012947	9.987053	45		19	
42	30	9.381389	10.618611	9.394344	10.605657	10.012955	9.987045	30		18	
43	45	9.381516	10.618484	9.394478	10.605522	10.012962	9.987038	15		17	
44	56	9.381643	10.618357	9.394614	10.605386	10.012970	9.987030	4		16	
45	15	9.381771	10.618229	9.394749	10.605251	10.012978	9.987022	45		15	
46	30	9.381898	10.618102	9.394881	10.605116	10.012986	9.987014	30		14	
47	45	9.382025	10.617975	9.395019	10.604981	10.012994	9.987006	15		13	
48	57	9.382152	10.617848	9.395154	10.604846	10.013002	9.986998	3		12	
49	15	9.382279	10.617721	9.395289	10.604711	10.013009	9.986991	45		11	
50	30	9.382406	10.617594	9.395424	10.604576	10.013017	9.986983	30		10	
51	45	9.382533	10.617467	9.395559	10.604441	10.013025	9.986975	15		9	
52	58	9.382660	10.617340	9.395693	10.604307	10.013033	9.986967	2		8	
53	15	9.382787	10.617213	9.395828	10.604172	10.013041	9.986959	45		7	
54	30	9.382914	10.617086	9.395963	10.604037	10.013049	9.986951	30		6	
55	45	9.383041	10.616959	9.396098	10.603902	10.013057	9.986943	15		5	
56	59	9.383168	10.616832	9.396233	10.603767	10.013064	9.986936	1		4	
57	15	9.383295	10.616705	9.396367	10.603633	10.013072	9.986928	45		3	
58	30	9.383422	10.616578	9.396502	10.603498	10.013080	9.986920	30		2	
59	45	9.383548	10.616452	9.396636	10.603364	10.013088	9.986912	15		1	
60	60	9.383675	10.616325	9.396771	10.603229	10.013096	9.986904	0		0	
sec.	"	sine.	secant.	cotangent.	tangent.	cosecant.	cosc.	"	"	sec.	min.
5° 4'				LOG. SINES, &c.				76 deg.			

0° 56".		LOG. SINES, &c. (t.)						74 deg.	
		sine.	cosecant.	tangent.	cotangent.	secant.	cosine.		sec.
0		9.383675	10.616325	9.396771	10.603229	10.013096	9.986904	60	60
	15	9.383802	10.616198	9.396906	10.603094	10.013104	9.986896	45	59
	30	9.383928	10.616072	9.397040	10.602960	10.013112	9.986888	30	58
	45	9.384055	10.615945	9.397174	10.602826	10.013120	9.986880	15	57
1		9.384181	10.615819	9.397309	10.602691	10.013127	9.986873	59	56
	15	9.384309	10.615692	9.397443	10.602557	10.013135	9.986865	45	55
	30	9.384434	10.615566	9.397578	10.602422	10.013143	9.986857	30	54
	45	9.384561	10.615439	9.397712	10.602288	10.013151	9.986849	15	53
2		9.384687	10.615313	9.397846	10.602154	10.013159	9.986841	58	52
	15	9.384814	10.615186	9.397980	10.602020	10.013167	9.986833	45	51
	30	9.384940	10.615060	9.398115	10.601885	10.013175	9.986825	30	50
	45	9.385066	10.614934	9.398249	10.601753	10.013183	9.986817	15	49
3		9.385192	10.614808	9.398383	10.601617	10.013191	9.986809	57	48
	15	9.385319	10.614681	9.398517	10.601483	10.013199	9.986801	45	47
	30	9.385445	10.614555	9.398651	10.601349	10.013206	9.986794	30	46
	45	9.385571	10.614429	9.398785	10.601215	10.013214	9.986786	15	45
4		9.385697	10.614303	9.398919	10.601081	10.013222	9.986778	56	44
	15	9.385823	10.614177	9.399053	10.600947	10.013230	9.986770	45	43
	30	9.385949	10.614051	9.399187	10.600813	10.013238	9.986762	30	42
	45	9.386075	10.613925	9.399321	10.600679	10.013246	9.986754	15	41
5		9.386201	10.613799	9.399455	10.600545	10.013254	9.986746	55	40
	15	9.386327	10.613673	9.399588	10.600412	10.013262	9.986738	45	39
	30	9.386452	10.613548	9.399722	10.600278	10.013270	9.986730	30	38
	45	9.386578	10.613422	9.399856	10.600144	10.013278	9.986722	15	37
6		9.386704	10.613296	9.399990	10.600010	10.013286	9.986714	54	36
	15	9.386830	10.613170	9.400123	10.599877	10.013294	9.986706	45	35
	30	9.386955	10.613045	9.400257	10.599743	10.013301	9.986699	30	34
	45	9.387081	10.612919	9.400390	10.599610	10.013309	9.986691	15	33
7		9.387207	10.612793	9.400524	10.599476	10.013317	9.986683	53	32
	15	9.387332	10.612668	9.400657	10.599343	10.013325	9.986675	45	31
	30	9.387458	10.612542	9.400791	10.599209	10.013333	9.986667	30	30
	45	9.387583	10.612417	9.400924	10.599076	10.013341	9.986659	15	29
8		9.387709	10.612291	9.401058	10.598942	10.013349	9.986651	52	28
	15	9.387834	10.612166	9.401191	10.598809	10.013357	9.986643	45	27
	30	9.387959	10.612041	9.401324	10.598676	10.013365	9.986635	30	26
	45	9.388085	10.611915	9.401458	10.598542	10.013373	9.986627	15	25
9		9.388210	10.611790	9.401591	10.598409	10.013381	9.986619	51	24
	15	9.388335	10.611665	9.401724	10.598276	10.013389	9.986611	45	23
	30	9.388461	10.611539	9.401857	10.598143	10.013397	9.986603	30	22
	45	9.388586	10.611414	9.401991	10.598009	10.013405	9.986595	15	21
10		9.388711	10.611289	9.402124	10.597876	10.013413	9.986587	50	20
	15	9.388836	10.611164	9.402257	10.597743	10.013421	9.986579	45	19
	30	9.388961	10.611039	9.402390	10.597610	10.013429	9.986571	30	18
	45	9.389086	10.610914	9.402523	10.597477	10.013437	9.986563	15	17
11		9.389211	10.610789	9.402656	10.597344	10.013445	9.986555	49	16
	15	9.389336	10.610664	9.402789	10.597211	10.013453	9.986547	45	15
	30	9.389461	10.610539	9.402922	10.597078	10.013461	9.986539	30	14
	45	9.389586	10.610414	9.403054	10.596946	10.013469	9.986531	15	13
12		9.389711	10.610289	9.403187	10.596813	10.013477	9.986523	48	12
	15	9.389835	10.610165	9.403320	10.596680	10.013485	9.986515	45	11
	30	9.389960	10.610040	9.403453	10.596547	10.013493	9.986507	30	10
	45	9.390085	10.609915	9.403585	10.596415	10.013501	9.986499	15	9
13		9.390210	10.609790	9.403718	10.596282	10.013509	9.986491	47	8
	15	9.390334	10.609666	9.403851	10.596149	10.013517	9.986483	45	7
	30	9.390459	10.609541	9.403983	10.596017	10.013525	9.986475	30	6
	45	9.390583	10.609417	9.404116	10.595884	10.013533	9.986467	15	5
14		9.390708	10.609292	9.404249	10.595751	10.013541	9.986459	46	4
	15	9.390832	10.609168	9.404381	10.595619	10.013549	9.986451	45	3
	30	9.390957	10.609043	9.404514	10.595486	10.013557	9.986443	30	2
	45	9.391081	10.608919	9.404646	10.595354	10.013565	9.986435	15	1
15		9.391206	10.608794	9.404778	10.595222	10.013573	9.986427	45	0
		cosine.	secant.	cotangent.	tangent.	cosecant.	sine.		sec.
5° 3".		LOG. SINES, &c.						75 deg.	

0° 57'.		LOG. SINES, &c. (1)				14 deg.	
sec.		sine.	coscant.	tangent.	colangent.	secant.	cosine.
0	15	9.391206	10.608794	9.404778	10.595222	10.013573	9.986427
1	15	9.391330	10.608670	9.404911	10.595089	10.013581	9.986419
2	30	9.391454	10.608546	9.405043	10.594957	10.013589	9.986411
3	45	9.391579	10.608421	9.405175	10.594825	10.013597	9.986403
4	16	9.391703	10.608297	9.405308	10.594692	10.013605	9.986395
5	15	9.391827	10.608173	9.405440	10.594560	10.013613	9.986387
6	30	9.391951	10.608049	9.405572	10.594428	10.013621	9.986379
7	45	9.392075	10.607925	9.405704	10.594296	10.013629	9.986371
8	17	9.392199	10.607801	9.405836	10.594164	10.013637	9.986363
9	15	9.392323	10.607677	9.405968	10.594032	10.013645	9.986355
10	30	9.392447	10.607553	9.406100	10.593900	10.013653	9.986347
11	45	9.392571	10.607429	9.406232	10.593768	10.013661	9.986339
12	18	9.392695	10.607305	9.406364	10.593636	10.013669	9.986331
13	15	9.392819	10.607181	9.406496	10.593504	10.013677	9.986323
14	30	9.392943	10.607057	9.406628	10.593372	10.013685	9.986315
15	45	9.393067	10.606933	9.406760	10.593240	10.013693	9.986307
16	19	9.393190	10.606810	9.406892	10.593108	10.013701	9.986299
17	15	9.393314	10.606686	9.407024	10.592976	10.013710	9.986290
18	30	9.393438	10.606562	9.407155	10.592845	10.013718	9.986282
19	45	9.393562	10.606438	9.407287	10.592713	10.013726	9.986274
20	20	9.393686	10.606315	9.407419	10.592581	10.013734	9.986266
21	15	9.393809	10.606191	9.407551	10.592449	10.013742	9.986258
22	30	9.393932	10.606068	9.407682	10.592318	10.013750	9.986250
23	45	9.394056	10.605944	9.407814	10.592186	10.013758	9.986242
24	21	9.394179	10.605821	9.407945	10.592055	10.013766	9.986234
25	15	9.394303	10.605697	9.408077	10.591923	10.013774	9.986226
26	30	9.394426	10.605574	9.408208	10.591792	10.013782	9.986218
27	45	9.394550	10.605450	9.408340	10.591660	10.013790	9.986210
28	22	9.394673	10.605327	9.408471	10.591529	10.013798	9.986202
29	15	9.394796	10.605204	9.408602	10.591398	10.013806	9.986194
30	30	9.394919	10.605081	9.408733	10.591266	10.013815	9.986185
31	45	9.395043	10.604957	9.408865	10.591135	10.013823	9.986177
32	23	9.395166	10.604834	9.408996	10.591004	10.013831	9.986169
33	15	9.395289	10.604711	9.409128	10.590872	10.013839	9.986161
34	30	9.395412	10.604588	9.409259	10.590741	10.013847	9.986153
35	45	9.395535	10.604465	9.409390	10.590610	10.013855	9.986145
36	24	9.395658	10.604342	9.409521	10.590479	10.013863	9.986137
37	15	9.395781	10.604219	9.409652	10.590348	10.013871	9.986129
38	30	9.395904	10.604096	9.409783	10.590217	10.013879	9.986121
39	45	9.396027	10.603973	9.409914	10.590086	10.013887	9.986113
40	25	9.396150	10.603850	9.410045	10.589955	10.013895	9.986104
41	15	9.396273	10.603727	9.410176	10.589824	10.013903	9.986096
42	30	9.396395	10.603605	9.410307	10.589693	10.013912	9.986088
43	45	9.396518	10.603482	9.410438	10.589562	10.013920	9.986080
44	26	9.396641	10.603359	9.410569	10.589431	10.013928	9.986072
45	15	9.396764	10.603236	9.410700	10.589300	10.013936	9.986064
46	30	9.396886	10.603114	9.410831	10.589169	10.013944	9.986056
47	45	9.397009	10.602991	9.410961	10.589039	10.013952	9.986048
48	27	9.397131	10.602869	9.411092	10.588908	10.013961	9.986039
49	15	9.397254	10.602746	9.411223	10.588777	10.013969	9.986031
50	30	9.397377	10.602623	9.411353	10.588647	10.013977	9.986023
51	45	9.397499	10.602501	9.411484	10.588516	10.013985	9.986015
52	28	9.397621	10.602379	9.411615	10.588385	10.013993	9.986007
53	15	9.397744	10.602256	9.411745	10.588255	10.014001	9.985999
54	30	9.397866	10.602134	9.411876	10.588124	10.014009	9.985991
55	45	9.397989	10.602011	9.412006	10.587994	10.014018	9.985982
56	29	9.398111	10.601889	9.412137	10.587863	10.014026	9.985974
57	15	9.398233	10.601767	9.412267	10.587733	10.014034	9.985966
58	30	9.398355	10.601645	9.412397	10.587603	10.014042	9.985958
59	45	9.398477	10.601523	9.412528	10.587472	10.014050	9.985950
60	30	9.398600	10.601400	9.412658	10.587342	10.014058	9.985942
sec.		cosine.	secant.	colangent.	tangent.	coscant.	sine.
5° 2'.		LOG. SINES, &c.				75 deg.	

0° 58'.		LOG. SINES, &c. (t.)						14 deg.	
sec.	min.	sine.	cosine.	tangent.	cotangent.	secant.	cosec.	sec.	min.
0	30	9.398600	10.601400	9.412658	10.587342	10.014058	9.985942	30	60
1	15	9.398722	10.601278	9.412788	10.587212	10.014067	9.985933	45	59
2	30	9.398844	10.601156	9.412919	10.587081	10.014075	9.985925	30	58
3	45	9.398966	10.601034	9.413049	10.586951	10.014083	9.985917	15	57
4	31	9.399088	10.600912	9.413179	10.586821	10.014091	9.985909	29	56
5	15	9.399210	10.600790	9.413309	10.586691	10.014099	9.985901	45	55
6	30	9.399332	10.600668	9.413439	10.586561	10.014108	9.985892	30	54
7	45	9.399454	10.600546	9.413569	10.586431	10.014116	9.985884	15	53
8	32	9.399575	10.600425	9.413699	10.586301	10.014124	9.985876	28	52
9	15	9.399697	10.600303	9.413829	10.586171	10.014132	9.985868	45	51
10	30	9.399819	10.600181	9.413959	10.586041	10.014140	9.985860	30	50
11	45	9.399941	10.600059	9.414089	10.585911	10.014148	9.985852	15	49
12	33	9.400062	10.599938	9.414219	10.585781	10.014157	9.985843	27	48
13	15	9.400184	10.599816	9.414349	10.585651	10.014165	9.985835	45	47
14	30	9.400306	10.599694	9.414479	10.585521	10.014173	9.985827	30	46
15	45	9.400427	10.599573	9.414609	10.585391	10.014181	9.985819	15	45
16	34	9.400549	10.599451	9.414738	10.585262	10.014189	9.985811	26	44
17	15	9.400670	10.599330	9.414868	10.585132	10.014198	9.985802	45	43
18	30	9.400792	10.599208	9.414998	10.585002	10.014206	9.985794	30	42
19	45	9.400913	10.599087	9.415127	10.584873	10.014214	9.985786	15	41
20	35	9.401035	10.598965	9.415257	10.584743	10.014222	9.985778	25	40
21	15	9.401156	10.598844	9.415387	10.584613	10.014231	9.985769	45	39
22	30	9.401277	10.598723	9.415516	10.584484	10.014239	9.985761	30	38
23	45	9.401399	10.598601	9.415646	10.584354	10.014247	9.985753	15	37
24	36	9.401520	10.598480	9.415775	10.584225	10.014255	9.985745	24	36
25	15	9.401641	10.598359	9.415905	10.584095	10.014263	9.985737	45	35
26	30	9.401762	10.598238	9.416034	10.583966	10.014272	9.985728	30	34
27	45	9.401884	10.598116	9.416163	10.583837	10.014280	9.985720	15	33
28	37	9.402005	10.597995	9.416293	10.583707	10.014288	9.985712	23	32
29	15	9.402126	10.597874	9.416422	10.583578	10.014296	9.985704	45	31
30	30	9.402247	10.597753	9.416551	10.583449	10.014305	9.985695	30	30
31	45	9.402368	10.597632	9.416681	10.583319	10.014313	9.985687	15	29
32	38	9.402489	10.597511	9.416810	10.583190	10.014321	9.985679	22	28
33	15	9.402610	10.597390	9.416939	10.583061	10.014329	9.985671	45	27
34	30	9.402731	10.597269	9.417068	10.582932	10.014338	9.985662	30	26
35	45	9.402852	10.597148	9.417197	10.582803	10.014346	9.985654	15	25
36	39	9.402972	10.597028	9.417326	10.582674	10.014354	9.985646	21	24
37	15	9.403093	10.596907	9.417455	10.582545	10.014362	9.985638	45	23
38	30	9.403214	10.596786	9.417585	10.582415	10.014371	9.985629	30	22
39	45	9.403335	10.596665	9.417713	10.582287	10.014379	9.985621	15	21
40	40	9.403455	10.596545	9.417842	10.582158	10.014387	9.985613	20	20
41	15	9.403576	10.596424	9.417971	10.582029	10.014395	9.985605	45	19
42	30	9.403697	10.596303	9.418100	10.581900	10.014404	9.985596	30	18
43	45	9.403817	10.596183	9.418229	10.581771	10.014412	9.985588	15	17
44	41	9.403938	10.596062	9.418358	10.581642	10.014420	9.985580	19	16
45	15	9.404058	10.595942	9.418487	10.581513	10.014428	9.985572	45	15
46	30	9.404179	10.595821	9.418615	10.581385	10.014437	9.985563	30	14
47	45	9.404299	10.595701	9.418744	10.581256	10.014445	9.985555	15	13
48	42	9.404420	10.595580	9.418873	10.581127	10.014453	9.985547	18	12
49	15	9.404540	10.595460	9.419002	10.580998	10.014462	9.985538	45	11
50	30	9.404660	10.595340	9.419130	10.580870	10.014470	9.985530	30	10
51	45	9.404781	10.595219	9.419259	10.580741	10.014478	9.985522	15	9
52	43	9.404901	10.595099	9.419387	10.580613	10.014487	9.985513	17	8
53	15	9.405021	10.594979	9.419516	10.580484	10.014495	9.985505	45	7
54	30	9.405141	10.594859	9.419644	10.580356	10.014503	9.985497	30	6
55	45	9.405261	10.594739	9.419773	10.580227	10.014511	9.985489	15	5
56	44	9.405382	10.594618	9.419901	10.580099	10.014520	9.985480	16	4
57	15	9.405502	10.594498	9.420030	10.579970	10.014528	9.985472	45	3
58	30	9.405622	10.594378	9.420158	10.579842	10.014536	9.985464	30	2
59	45	9.405742	10.594258	9.420286	10.579714	10.014545	9.985455	15	1
60	45	9.405862	10.594138	9.420415	10.579585	10.014553	9.985447	15	0
sec.	min.	sine.	cosine.	tangent.	cotangent.	secant.	cosec.	sec.	min.

0° 59'.		LOG. SINES, &c. (t.)						14 deg
sec.	size.	cosine.	tangent.	cotangent.	secant.	cosecant.		
0	45	9.405862	10.594138	9.420415	10.579585	10.014553	9.985447	
1	15	9.405982	10.594018	9.420543	10.579457	10.014561	9.985439	
2	30	9.406102	10.593895	9.420671	10.579329	10.014570	9.985430	
3	45	9.406221	10.593779	9.420799	10.579201	10.014578	9.985422	
4	46	9.406341	10.593659	9.420927	10.579073	10.014586	9.985414	
5	15	9.406461	10.593539	9.421056	10.578944	10.014595	9.985405	
6	30	9.406581	10.593419	9.421184	10.578816	10.014603	9.985397	
7	45	9.406701	10.593299	9.421312	10.578688	10.014611	9.985389	
8	47	9.406820	10.593180	9.421440	10.578560	10.014620	9.985380	
9	15	9.406940	10.593060	9.421568	10.578432	10.014628	9.985372	
10	30	9.407060	10.592940	9.421696	10.578304	10.014636	9.985364	
11	45	9.407179	10.592821	9.421824	10.578176	10.014645	9.985355	
12	48	9.407299	10.592701	9.421951	10.578049	10.014653	9.985347	
13	15	9.407418	10.592582	9.422079	10.577921	10.014661	9.985339	
14	30	9.407538	10.592462	9.422207	10.577793	10.014670	9.985330	
15	45	9.407657	10.592343	9.422335	10.577665	10.014678	9.985322	
16	49	9.407777	10.592223	9.422463	10.577537	10.014686	9.985314	
17	15	9.407896	10.592104	9.422590	10.577410	10.014695	9.985305	
18	30	9.408015	10.591985	9.422718	10.577282	10.014703	9.985297	
19	45	9.408135	10.591865	9.422846	10.577154	10.014711	9.985289	
20	50	9.408254	10.591746	9.422973	10.577027	10.014720	9.985280	
21	15	9.408373	10.591627	9.423101	10.576899	10.014728	9.985272	
22	30	9.408492	10.591508	9.423229	10.576771	10.014736	9.985264	
23	45	9.408611	10.591389	9.423356	10.576644	10.014745	9.985255	
24	51	9.408731	10.591269	9.423484	10.576516	10.014753	9.985247	
25	15	9.408850	10.591150	9.423611	10.576389	10.014762	9.985238	
26	30	9.408969	10.591031	9.423739	10.576261	10.014770	9.985230	
27	45	9.409088	10.590911	9.423866	10.576134	10.014778	9.985222	
28	52	9.409207	10.590793	9.423993	10.576007	10.014787	9.985213	
29	15	9.409326	10.590674	9.424121	10.575879	10.014795	9.985205	
30	30	9.409445	10.590555	9.424248	10.575752	10.014804	9.985197	
31	45	9.409563	10.590437	9.424375	10.575625	10.014812	9.985188	
32	53	9.409682	10.590318	9.424503	10.575497	10.014820	9.985180	
33	15	9.409801	10.590199	9.424630	10.575370	10.014829	9.985171	
34	30	9.409920	10.590080	9.424757	10.575243	10.014837	9.985163	
35	45	9.410039	10.589961	9.424884	10.575116	10.014845	9.985155	
36	54	9.410157	10.589843	9.425011	10.574989	10.014854	9.985146	
37	15	9.410276	10.589724	9.425138	10.574862	10.014862	9.985138	
38	30	9.410395	10.589605	9.425265	10.574735	10.014871	9.985129	
39	45	9.410513	10.589487	9.425392	10.574608	10.014879	9.985121	
40	55	9.410632	10.589368	9.425519	10.574481	10.014888	9.985112	
41	15	9.410750	10.589250	9.425646	10.574354	10.014896	9.985104	
42	30	9.410869	10.589131	9.425773	10.574227	10.014904	9.985096	
43	45	9.410987	10.589013	9.425900	10.574100	10.014913	9.985087	
44	56	9.411106	10.588894	9.426027	10.573973	10.014921	9.985079	
45	15	9.411224	10.588776	9.426154	10.573846	10.014930	9.985070	
46	30	9.411343	10.588657	9.426281	10.573719	10.014938	9.985062	
47	45	9.411461	10.588539	9.426407	10.573593	10.014946	9.985054	
48	57	9.411579	10.588421	9.426534	10.573466	10.014955	9.985045	
49	15	9.411698	10.588302	9.426661	10.573339	10.014963	9.985037	
50	30	9.411816	10.588184	9.426787	10.573213	10.014972	9.985028	
51	45	9.411934	10.588066	9.426914	10.573086	10.014980	9.985020	
52	58	9.412052	10.587948	9.427041	10.572959	10.014989	9.985011	
53	15	9.412170	10.587830	9.427167	10.572833	10.014997	9.985003	
54	30	9.412288	10.587712	9.427294	10.572706	10.015006	9.984994	
55	45	9.412406	10.587594	9.427420	10.572580	10.015014	9.984986	
56	59	9.412524	10.587476	9.427547	10.572453	10.015022	9.984978	
57	15	9.412642	10.587358	9.427673	10.572327	10.015031	9.984969	
58	30	9.412760	10.587240	9.427800	10.572200	10.015039	9.984961	
59	45	9.412878	10.587122	9.427926	10.572074	10.015048	9.984952	
60	60	9.412996	10.587004	9.428052	10.571948	10.015056	9.984944	
sec.	size.	cosine.	tangent.	cotangent.	secant.	cosecant.		
5° 0'.		LOG. SINES, &c.						75 deg.

1° 0'		LOG. SINES, &c. (L.)						15 deg.	
min.	sec.	sine.	coscant.	tangent.	cotangent.	secant.	cosec.	min.	sec.
1	0	9.412996	10.587904	9.428052	10.571948	10.015056	9.984944	60	60
2	15	9.413114	10.586886	9.428179	10.571821	10.015065	9.984935	45	59
3	30	9.413232	10.586768	9.428305	10.571695	10.015073	9.984927	30	58
4	45	9.413350	10.586650	9.428431	10.571569	10.015082	9.984918	15	57
5	1	9.413467	10.586533	9.428557	10.571443	10.015090	9.984910	59	56
6	15	9.413585	10.586415	9.428684	10.571316	10.015099	9.984901	45	55
7	30	9.413703	10.586297	9.428810	10.571190	10.015107	9.984893	30	54
8	45	9.413821	10.586179	9.428936	10.571064	10.015116	9.984884	15	53
9	2	9.413938	10.586062	9.429062	10.570938	10.015124	9.984876	58	52
10	15	9.414056	10.585944	9.429188	10.570812	10.015133	9.984867	45	51
11	30	9.414173	10.585827	9.429314	10.570686	10.015141	9.984859	30	50
12	45	9.414291	10.585709	9.429440	10.570560	10.015150	9.984850	15	49
13	3	9.414408	10.585592	9.429566	10.570434	10.015158	9.984842	57	48
14	15	9.414526	10.585474	9.429692	10.570308	10.015166	9.984834	45	47
15	30	9.414643	10.585357	9.429818	10.570182	10.015175	9.984825	30	46
16	45	9.414760	10.585240	9.429944	10.570056	10.015183	9.984817	15	45
17	4	9.414878	10.585122	9.430070	10.569930	10.015192	9.984808	56	44
18	15	9.414995	10.585005	9.430195	10.569805	10.015200	9.984800	45	43
19	30	9.415112	10.584888	9.430321	10.569679	10.015209	9.984791	30	42
20	45	9.415230	10.584770	9.430447	10.569553	10.015218	9.984782	15	41
21	5	9.415347	10.584653	9.430573	10.569427	10.015226	9.984774	55	40
22	15	9.415464	10.584536	9.430698	10.569302	10.015235	9.984765	45	39
23	30	9.415581	10.584419	9.430824	10.569176	10.015243	9.984757	30	38
24	45	9.415698	10.584302	9.430950	10.569050	10.015252	9.984748	15	37
25	6	9.415815	10.584185	9.431075	10.568925	10.015260	9.984740	54	36
26	15	9.415932	10.584068	9.431201	10.568799	10.015269	9.984731	45	35
27	30	9.416049	10.583951	9.431326	10.568674	10.015277	9.984723	30	34
28	45	9.416166	10.583834	9.431452	10.568548	10.015286	9.984714	15	33
29	7	9.416283	10.583717	9.431577	10.568423	10.015294	9.984706	53	32
30	15	9.416400	10.583600	9.431703	10.568297	10.015303	9.984697	45	31
31	30	9.416517	10.583483	9.431828	10.568172	10.015311	9.984689	30	30
32	45	9.416634	10.583366	9.431953	10.568047	10.015320	9.984680	15	29
33	8	9.416751	10.583249	9.432079	10.567921	10.015328	9.984672	52	28
34	15	9.416867	10.583133	9.432204	10.567796	10.015337	9.984663	45	27
35	30	9.416984	10.583016	9.432329	10.567671	10.015345	9.984655	30	26
36	45	9.417101	10.582899	9.432455	10.567545	10.015354	9.984646	15	25
37	9	9.417217	10.582783	9.432580	10.567420	10.015363	9.984637	51	24
38	15	9.417334	10.582666	9.432705	10.567295	10.015371	9.984629	45	23
39	30	9.417451	10.582549	9.432830	10.567170	10.015380	9.984620	30	22
40	45	9.417567	10.582433	9.432955	10.567045	10.015388	9.984612	15	21
41	10	9.417684	10.582316	9.433080	10.566920	10.015397	9.984603	50	20
42	15	9.417800	10.582200	9.433205	10.566795	10.015405	9.984595	45	19
43	30	9.417917	10.582083	9.433330	10.566670	10.015414	9.984586	30	18
44	45	9.418033	10.581967	9.433455	10.566545	10.015422	9.984578	15	17
45	11	9.418149	10.581851	9.433580	10.566420	10.015431	9.984569	49	16
46	15	9.418266	10.581734	9.433705	10.566295	10.015440	9.984560	45	15
47	30	9.418382	10.581618	9.433830	10.566170	10.015448	9.984552	30	14
48	45	9.418498	10.581502	9.433955	10.566045	10.015457	9.984543	15	13
49	12	9.418615	10.581385	9.434080	10.565920	10.015465	9.984535	48	12
50	15	9.418731	10.581269	9.434205	10.565795	10.015474	9.984526	45	11
51	30	9.418847	10.581153	9.434330	10.565670	10.015482	9.984518	30	10
52	45	9.418963	10.581037	9.434454	10.565546	10.015491	9.984509	15	9
53	13	9.419079	10.580921	9.434579	10.565421	10.015500	9.984500	47	8
54	15	9.419196	10.580804	9.434704	10.565296	10.015508	9.984492	45	7
55	30	9.419312	10.580688	9.434828	10.565172	10.015517	9.984483	30	6
56	45	9.419428	10.580572	9.434953	10.565047	10.015525	9.984475	15	5
57	14	9.419544	10.580456	9.435078	10.564922	10.015534	9.984466	46	4
58	15	9.419660	10.580340	9.435202	10.564798	10.015543	9.984457	45	3
59	30	9.419775	10.580225	9.435327	10.564673	10.015551	9.984449	30	2
60	45	9.419891	10.580109	9.435451	10.564549	10.015560	9.984440	15	1
61	15	9.420007	10.579993	9.435576	10.564424	10.015568	9.984431	45	0
min.	sec.	sine.	coscant.	tangent.	cotangent.	secant.	cosec.	min.	sec.

4° 59'

LOG. SINES, &c.

74 deg.

1° 30'.		LOG. SINES, &c. (t)						15 deg.
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	co-sine.	"
0	45	9.433675	10.566325	9.450294	10.549706	10.016620	9.983380	15
1	15	9.433786	10.566214	9.450415	10.549585	10.016628	9.983372	45
2	30	9.433898	10.566102	9.450536	10.549464	10.016637	9.983363	30
3	45	9.434010	10.565990	9.450657	10.549343	10.016646	9.983354	15
4	46	9.434122	10.565878	9.450777	10.549223	10.016655	9.983345	14
5	15	9.434234	10.565766	9.450898	10.549102	10.016664	9.983336	45
6	30	9.434346	10.565654	9.451019	10.548981	10.016673	9.983327	30
7	45	9.434458	10.565542	9.451140	10.548860	10.016682	9.983318	15
8	47	9.434569	10.565431	9.451260	10.548740	10.016691	9.983309	13
9	15	9.434681	10.565319	9.451381	10.548619	10.016700	9.983300	45
10	30	9.434793	10.565207	9.451501	10.548499	10.016709	9.983291	30
11	45	9.434904	10.565096	9.451622	10.548378	10.016718	9.983282	15
12	48	9.435016	10.564984	9.451743	10.548257	10.016727	9.983273	12
13	15	9.435128	10.564872	9.451863	10.548137	10.016736	9.983264	45
14	30	9.435239	10.564761	9.451984	10.548016	10.016744	9.983256	30
15	45	9.435351	10.564649	9.452104	10.547896	10.016753	9.983247	15
16	49	9.435462	10.564538	9.452225	10.547775	10.016762	9.983238	11
17	15	9.435574	10.564426	9.452345	10.547655	10.016771	9.983229	45
18	30	9.435685	10.564315	9.452465	10.547535	10.016780	9.983220	30
19	45	9.435797	10.564203	9.452586	10.547414	10.016789	9.983211	15
20	50	9.435908	10.564092	9.452706	10.547294	10.016798	9.983202	10
21	15	9.436019	10.563981	9.452826	10.547174	10.016807	9.983193	45
22	30	9.436131	10.563869	9.452947	10.547053	10.016816	9.983184	30
23	45	9.436242	10.563758	9.453067	10.546933	10.016825	9.983175	15
24	51	9.436353	10.563647	9.453187	10.546813	10.016834	9.983166	9
25	15	9.436464	10.563536	9.453307	10.546693	10.016843	9.983157	45
26	30	9.436576	10.563424	9.453428	10.546572	10.016852	9.983148	30
27	45	9.436687	10.563313	9.453548	10.546452	10.016861	9.983139	15
28	52	9.436798	10.563202	9.453668	10.546332	10.016870	9.983130	8
29	15	9.436909	10.563091	9.453788	10.546212	10.016879	9.983121	45
30	30	9.437020	10.562980	9.453908	10.546092	10.016888	9.983112	30
31	45	9.437131	10.562869	9.454028	10.545972	10.016897	9.983103	15
32	53	9.437242	10.562758	9.454148	10.545852	10.016906	9.983094	7
33	15	9.437353	10.562647	9.454268	10.545732	10.016915	9.983085	45
34	30	9.437464	10.562536	9.454388	10.545612	10.016924	9.983076	30
35	45	9.437575	10.562425	9.454508	10.545492	10.016933	9.983067	15
36	54	9.437686	10.562314	9.454628	10.545372	10.016942	9.983058	6
37	15	9.437797	10.562203	9.454747	10.545253	10.016951	9.983049	45
38	30	9.437908	10.562092	9.454867	10.545133	10.016960	9.983040	30
39	45	9.438018	10.561982	9.454987	10.545013	10.016969	9.983031	15
40	55	9.438129	10.561871	9.455107	10.544893	10.016978	9.983022	5
41	15	9.438240	10.561760	9.455227	10.544773	10.016987	9.983013	45
42	30	9.438351	10.561649	9.455346	10.544654	10.016996	9.983004	30
43	45	9.438461	10.561539	9.455466	10.544534	10.017005	9.982995	15
44	56	9.438572	10.561428	9.455586	10.544414	10.017014	9.982986	4
45	15	9.438682	10.561318	9.455705	10.544295	10.017023	9.982977	45
46	30	9.438793	10.561207	9.455825	10.544175	10.017032	9.982968	30
47	45	9.438904	10.561096	9.455944	10.544056	10.017041	9.982959	15
48	57	9.439014	10.560986	9.456064	10.543936	10.017050	9.982950	3
49	15	9.439125	10.560875	9.456184	10.543816	10.017059	9.982941	45
50	30	9.439235	10.560765	9.456303	10.543697	10.017068	9.982932	30
51	45	9.439346	10.560654	9.456422	10.543578	10.017077	9.982923	15
52	58	9.439456	10.560544	9.456542	10.543458	10.017086	9.982914	2
53	15	9.439566	10.560434	9.456661	10.543339	10.017095	9.982905	45
54	30	9.439677	10.560323	9.456781	10.543219	10.017104	9.982896	30
55	45	9.439787	10.560213	9.456900	10.543100	10.017113	9.982887	15
56	59	9.439897	10.560103	9.457019	10.542981	10.017122	9.982878	1
57	15	9.440007	10.559993	9.457139	10.542861	10.017131	9.982869	45
58	30	9.440118	10.559882	9.457258	10.542742	10.017140	9.982860	30
59	45	9.440228	10.559772	9.457377	10.542623	10.017149	9.982851	15
60	60	9.440338	10.559662	9.457496	10.542504	10.017158	9.982842	0
sec.	"	co-sine.	secant.	cotangent.	tangent.	cosecant.	sine.	"
4° 56'.		LOG. SINES, &c.						74 deg.

1° 45'			LOG. SINES, &c. (1.)						16 deg.		
sec.	min.	sec.	sine.	coscant.	tangent.	cotangent.	secant.	cosec.	min.	sec.	
0	0		9.440338	10.550662	9.457496	10.542504	10.017158	9.982842	60	60	
1	15		9.440448	10.550552	9.457616	10.542384	10.017167	9.982833	45	59	
2	30		9.440558	10.550442	9.457735	10.542265	10.017177	9.982823	30	58	
3	45		9.440668	10.550332	9.457854	10.542146	10.017186	9.982814	15	57	
4	1		9.440778	10.550222	9.457973	10.542027	10.017195	9.982805	59	■	
5	15		9.440888	10.550112	9.458092	10.541908	10.017204	9.982796	45	55	
6	30		9.440998	10.550002	9.458211	10.541789	10.017213	9.982787	30	54	
7	45		9.441108	10.550892	9.458330	10.541670	10.017222	9.982778	15	53	
8	2		9.441218	10.550782	9.458449	10.541551	10.017231	9.982769	58	52	
9	15		9.441328	10.550672	9.458568	10.541432	10.017240	9.982760	45	51	
10	30		9.441438	10.550562	9.458687	10.541313	10.017249	9.982751	30	50	
11	45		9.441548	10.550452	9.458806	10.541194	10.017258	9.982742	15	49	
12	3		9.441658	10.550342	9.458925	10.541075	10.017267	9.982733	57	48	
13	15		9.441767	10.550233	9.459044	10.540956	10.017276	9.982724	45	47	
14	30		9.441877	10.550123	9.459162	10.540838	10.017285	9.982715	30	46	
15	45		9.441987	10.550013	9.459281	10.540719	10.017295	9.982705	15	45	
16	4		9.442096	10.550904	9.459400	10.540600	10.017304	9.982696	56	44	
17	15		9.442206	10.550794	9.459519	10.540481	10.017313	9.982687	45	43	
18	30		9.442316	10.550684	9.459637	10.540363	10.017322	9.982678	30	42	
19	45		9.442425	10.550575	9.459756	10.540244	10.017331	9.982669	15	41	
20	5		9.442535	10.550465	9.459875	10.540125	10.017340	9.982660	55	40	
21	15		9.442644	10.550356	9.459993	10.540007	10.017349	9.982651	45	39	
22	30		9.442754	10.550246	9.460112	10.539888	10.017358	9.982642	30	38	
23	45		9.442863	10.550137	9.460231	10.539769	10.017367	9.982633	15	37	
24	6		9.442973	10.550027	9.460349	10.539651	10.017376	9.982624	54	36	
25	15		9.443082	10.550918	9.460468	10.539532	10.017386	9.982614	45	35	
26	30		9.443192	10.550808	9.460586	10.539414	10.017395	9.982605	30	34	
27	45		9.443301	10.550699	9.460705	10.539295	10.017404	9.982596	15	33	
28	7		9.443410	10.550590	9.460823	10.539177	10.017413	9.982587	53	32	
29	15		9.443520	10.550480	9.460942	10.539058	10.017422	9.982578	45	31	
30	30		9.443629	10.550371	9.461060	10.538940	10.017431	9.982569	30	30	
31	45		9.443738	10.550262	9.461178	10.538822	10.017440	9.982560	15	29	
32	8		9.443847	10.550153	9.461297	10.538703	10.017449	9.982551	52	28	
33	15		9.443956	10.550044	9.461415	10.538585	10.017459	9.982541	45	27	
34	30		9.444065	10.550935	9.461533	10.538467	10.017468	9.982532	30	26	
35	45		9.444175	10.550825	9.461651	10.538349	10.017477	9.982523	15	25	
36	9		9.444284	10.550716	9.461770	10.538230	10.017486	9.982514	51	24	
37	15		9.444393	10.550607	9.461888	10.538112	10.017495	9.982505	45	23	
38	30		9.444502	10.550498	9.462006	10.537994	10.017504	9.982496	30	22	
39	45		9.444611	10.550389	9.462124	10.537876	10.017513	9.982487	15	21	
40	10		9.444720	10.550280	9.462242	10.537758	10.017523	9.982477	50	20	
41	15		9.444829	10.550171	9.462360	10.537640	10.017532	9.982468	45	19	
42	30		9.444938	10.550062	9.462478	10.537522	10.017541	9.982459	30	18	
43	45		9.445046	10.550954	9.462596	10.537404	10.017550	9.982450	15	17	
44	11		9.445155	10.550845	9.462714	10.537286	10.017559	9.982441	49	16	
45	15		9.445264	10.550736	9.462832	10.537168	10.017568	9.982432	45	15	
46	30		9.445373	10.550627	9.462950	10.537050	10.017578	9.982422	30	14	
47	45		9.445482	10.550518	9.463068	10.536932	10.017587	9.982413	15	13	
48	12		9.445590	10.550410	9.463186	10.536814	10.017596	9.982404	48	12	
49	15		9.445699	10.550301	9.463304	10.536696	10.017605	9.982395	45	11	
50	30		9.445808	10.550192	9.463422	10.536578	10.017614	9.982386	30	10	
51	45		9.445916	10.550084	9.463540	10.536460	10.017624	9.982376	15	9	
52	13		9.446025	10.550975	9.463658	10.536342	10.017633	9.982367	47	8	
53	15		9.446133	10.550867	9.463775	10.536225	10.017642	9.982358	45	7	
54	30		9.446242	10.550758	9.463893	10.536107	10.017651	9.982349	30	6	
55	45		9.446351	10.550649	9.464011	10.535989	10.017660	9.982340	15	5	
56	14		9.446459	10.550541	9.464128	10.535872	10.017669	9.982331	46	4	
57	15		9.446567	10.550433	9.464246	10.535754	10.017679	9.982321	45	3	
58	30		9.446676	10.550324	9.464364	10.535636	10.017688	9.982312	30	2	
59	45		9.446784	10.550216	9.464481	10.535519	10.017697	9.982303	15	1	
60	15		9.446893	10.550107	9.464599	10.535401	10.017706	9.992294	45	0	
sec.	min.	sec.	sine.	coscant.	cotangent.	tangent.	coscant.	sine.	min.	sec.	
4° 55'			LOG. SINES, &c.						73 deg.		

14 5°.		LOG. SINES, &c. (L.)				16 deg.	
sec.	min.	sine.	coscant.	tangent.	cotangent.	secant.	cosec.
0	15	9.446893	10.553107	9.464599	10.535401	10.017708	9.982294
1	15	9.447001	10.552999	9.464716	10.535284	10.017715	9.982285
2	30	9.447109	10.552891	9.464834	10.535166	10.017725	9.982275
3	45	9.447218	10.552782	9.464951	10.535049	10.017734	9.982266
4	16	9.447326	10.552674	9.465069	10.534931	10.017743	9.982257
5	15	9.447434	10.552566	9.465186	10.534814	10.017752	9.982248
6	30	9.447542	10.552458	9.465304	10.534696	10.017762	9.982238
7	45	9.447650	10.552350	9.465421	10.534579	10.017771	9.982229
8	17	9.447759	10.552241	9.465539	10.534461	10.017780	9.982220
9	15	9.447867	10.552133	9.465656	10.534344	10.017789	9.982211
10	30	9.447975	10.552025	9.465773	10.534227	10.017798	9.982202
11	45	9.448083	10.551917	9.465890	10.534110	10.017808	9.982192
12	18	9.448191	10.551809	9.466008	10.533992	10.017817	9.982183
13	15	9.448299	10.551701	9.466125	10.533875	10.017826	9.982174
14	30	9.448407	10.551593	9.466242	10.533758	10.017835	9.982165
15	45	9.448515	10.551485	9.466359	10.533641	10.017845	9.982155
16	19	9.448623	10.551377	9.466476	10.533524	10.017854	9.982146
17	15	9.448731	10.551269	9.466594	10.533406	10.017863	9.982137
18	30	9.448838	10.551162	9.466711	10.533289	10.017872	9.982128
19	45	9.448946	10.551054	9.466828	10.533172	10.017882	9.982118
20	20	9.449054	10.550946	9.466945	10.533055	10.017891	9.982109
21	15	9.449162	10.550838	9.467062	10.532938	10.017900	9.982100
22	30	9.449269	10.550731	9.467179	10.532821	10.017909	9.982091
23	45	9.449377	10.550623	9.467296	10.532704	10.017919	9.982081
24	21	9.449485	10.550515	9.467413	10.532587	10.017928	9.982072
25	15	9.449592	10.550408	9.467530	10.532470	10.017937	9.982063
26	30	9.449700	10.550300	9.467646	10.532354	10.017946	9.982054
27	45	9.449808	10.550192	9.467763	10.532237	10.017956	9.982044
28	22	9.449915	10.550085	9.467880	10.532120	10.017965	9.982035
29	15	9.450023	10.549977	9.467997	10.532003	10.017974	9.982026
30	30	9.450130	10.549870	9.468114	10.531886	10.017984	9.982016
31	45	9.450238	10.549762	9.468230	10.531770	10.017993	9.982007
32	23	9.450345	10.549655	9.468347	10.531653	10.018002	9.981998
33	15	9.450453	10.549547	9.468464	10.531536	10.018011	9.981989
34	30	9.450560	10.549440	9.468581	10.531419	10.018021	9.981979
35	45	9.450667	10.549333	9.468697	10.531303	10.018030	9.981970
36	24	9.450775	10.549225	9.468814	10.531186	10.018039	9.981961
37	15	9.450882	10.549118	9.468930	10.531070	10.018049	9.981951
38	30	9.450989	10.549011	9.469047	10.530953	10.018058	9.981942
39	45	9.451096	10.548904	9.469164	10.530836	10.018067	9.981933
40	25	9.451204	10.548796	9.469280	10.530720	10.018076	9.981924
41	15	9.451311	10.548689	9.469397	10.530603	10.018086	9.981914
42	30	9.451418	10.548582	9.469513	10.530487	10.018095	9.981905
43	45	9.451525	10.548475	9.469629	10.530371	10.018104	9.981896
44	26	9.451632	10.548368	9.469746	10.530254	10.018114	9.981886
45	15	9.451739	10.548261	9.469862	10.530138	10.018123	9.981877
46	30	9.451846	10.548154	9.469979	10.530021	10.018132	9.981868
47	45	9.451953	10.548047	9.470095	10.529905	10.018142	9.981859
48	27	9.452060	10.547940	9.470211	10.529789	10.018151	9.981849
49	15	9.452167	10.547833	9.470327	10.529673	10.018160	9.981840
50	30	9.452274	10.547726	9.470444	10.529556	10.018170	9.981830
51	45	9.452381	10.547619	9.470560	10.529440	10.018179	9.981821
52	28	9.452488	10.547512	9.470676	10.529324	10.018188	9.981812
53	15	9.452595	10.547405	9.470792	10.529208	10.018198	9.981802
54	30	9.452702	10.547298	9.470908	10.529092	10.018207	9.981793
55	45	9.452808	10.547192	9.471025	10.528975	10.018216	9.981784
56	29	9.452915	10.547085	9.471141	10.528859	10.018226	9.981774
57	15	9.453022	10.546978	9.471257	10.528743	10.018235	9.981765
58	30	9.453129	10.546872	9.471373	10.528627	10.018244	9.981756
59	45	9.453235	10.546765	9.471489	10.528511	10.018254	9.981746
60	30	9.453342	10.546658	9.471605	10.528395	10.018263	9.981737
sec.	min.	sine.	coscant.	tangent.	cotangent.	secant.	cosec.
4 54°.		LOG. SINES, &c.				73 deg.	

1 st 6 ^m .		LOG. SINES, &c. (t.)						16 deg.	
sec.	'	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	30	9.453342	10.546658	9.471605	10.528395	10.018263	9.981737	30	60
1	15	9.453448	10.546552	9.471721	10.528279	10.018272	9.981728	45	59
2	30	9.453555	10.546445	9.471837	10.528163	10.018282	9.981718	30	58
3	45	9.453661	10.546339	9.471953	10.528047	10.018291	9.981709	15	57
4	31	9.453768	10.546232	9.472068	10.527932	10.018301	9.981699	29	56
5	15	9.453875	10.546125	9.472184	10.527816	10.018310	9.981690	45	55
6	30	9.453981	10.546019	9.472300	10.527700	10.018319	9.981681	30	54
7	45	9.454087	10.545913	9.472416	10.527584	10.018329	9.981671	15	53
8	32	9.454194	10.545806	9.472532	10.527468	10.018338	9.981662	28	52
9	15	9.454300	10.545700	9.472648	10.527352	10.018347	9.981653	45	51
10	30	9.454407	10.545593	9.472763	10.527237	10.018357	9.981643	30	50
11	45	9.454513	10.545487	9.472879	10.527121	10.018366	9.981634	15	49
12	33	9.454619	10.545381	9.472995	10.527005	10.018376	9.981624	27	48
13	15	9.454725	10.545275	9.473110	10.526890	10.018385	9.981615	45	47
14	30	9.454832	10.545168	9.473226	10.526774	10.018394	9.981606	30	46
15	45	9.454938	10.545062	9.473342	10.526658	10.018404	9.981596	15	45
16	34	9.455044	10.544956	9.473457	10.526543	10.018413	9.981587	26	44
17	15	9.455150	10.544850	9.473573	10.526427	10.018422	9.981578	45	43
18	30	9.455256	10.544744	9.473688	10.526312	10.018432	9.981568	30	42
19	45	9.455362	10.544638	9.473804	10.526196	10.018441	9.981559	15	41
20	35	9.455469	10.544531	9.473919	10.526081	10.018451	9.981549	25	40
21	15	9.455575	10.544425	9.474035	10.525965	10.018460	9.981540	45	39
22	30	9.455681	10.544319	9.474150	10.525850	10.018470	9.981530	30	38
23	45	9.455787	10.544213	9.474265	10.525735	10.018479	9.981521	15	37
24	36	9.455893	10.544107	9.474381	10.525619	10.018488	9.981512	24	36
25	15	9.455998	10.544002	9.474496	10.525504	10.018498	9.981502	45	35
26	30	9.456104	10.543896	9.474611	10.525389	10.018507	9.981493	30	34
27	45	9.456210	10.543790	9.474727	10.525273	10.018517	9.981483	15	33
28	37	9.456316	10.543684	9.474842	10.525158	10.018526	9.981474	23	32
29	15	9.456422	10.543578	9.474957	10.525043	10.018535	9.981465	45	31
30	30	9.456528	10.543472	9.475072	10.524928	10.018545	9.981455	30	30
31	45	9.456633	10.543367	9.475188	10.524812	10.018554	9.981446	15	29
32	38	9.456739	10.543261	9.475303	10.524697	10.018564	9.981436	22	28
33	15	9.456845	10.543155	9.475418	10.524582	10.018573	9.981427	45	27
34	30	9.456951	10.543049	9.475533	10.524467	10.018583	9.981417	30	26
35	45	9.457056	10.542944	9.475648	10.524352	10.018592	9.981408	15	25
36	39	9.457162	10.542838	9.475763	10.524237	10.018601	9.981399	21	24
37	15	9.457267	10.542733	9.475878	10.524122	10.018611	9.981389	45	23
38	30	9.457373	10.542627	9.475993	10.524007	10.018620	9.981380	30	22
39	45	9.457478	10.542522	9.476108	10.523892	10.018630	9.981370	15	21
40	40	9.457584	10.542416	9.476223	10.523777	10.018639	9.981361	20	20
41	15	9.457689	10.542311	9.476338	10.523662	10.018649	9.981351	45	19
42	30	9.457795	10.542205	9.476453	10.523547	10.018658	9.981342	30	18
43	45	9.457900	10.542100	9.476568	10.523432	10.018668	9.981332	15	17
44	41	9.458006	10.541994	9.476683	10.523317	10.018677	9.981323	19	16
45	15	9.458111	10.541889	9.476798	10.523202	10.018687	9.981313	45	15
46	30	9.458216	10.541784	9.476912	10.523088	10.018696	9.981304	30	14
47	45	9.458322	10.541678	9.477027	10.522973	10.018706	9.981294	15	13
48	42	9.458427	10.541573	9.477142	10.522858	10.018715	9.981285	18	12
49	15	9.458532	10.541468	9.477257	10.522743	10.018724	9.981276	45	11
50	30	9.458638	10.541362	9.477371	10.522629	10.018734	9.981266	30	10
51	45	9.458743	10.541257	9.477486	10.522514	10.018743	9.981257	15	9
52	43	9.458848	10.541152	9.477601	10.522399	10.018753	9.981247	17	8
53	15	9.458953	10.541047	9.477715	10.522285	10.018762	9.981238	45	7
54	30	9.459058	10.540942	9.477830	10.522170	10.018772	9.981228	30	6
55	45	9.459163	10.540837	9.477945	10.522055	10.018781	9.981219	15	5
56	44	9.459268	10.540732	9.478059	10.521941	10.018791	9.981209	16	4
57	15	9.459373	10.540627	9.478174	10.521826	10.018800	9.981200	45	3
58	30	9.459478	10.540522	9.478288	10.521712	10.018810	9.981190	30	2
59	45	9.459583	10.540417	9.478403	10.521597	10.018819	9.981181	15	1
60	45	9.459688	10.540312	9.478517	10.521483	10.018829	9.981171	15	0
sec.	'	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
1 st 3 ^m .		LOG. SINES, &c.						73 deg.	

1° 7'		LOG. SINES, &c. (1)						16 deg.	
sec.		sine.	coscant.	tangent	cotangent.	secant.	cosine.		
0	45	9.459688	10.540312	9.478517	10.521483	10.018829	9.981171	15	
1	15	9.459793	10.540207	9.478632	10.521368	10.018838	9.981162	45	
2	30	9.459898	10.540102	9.478746	10.521254	10.018848	9.981152	30	
3	45	9.460003	10.539997	9.478860	10.521140	10.018857	9.981143	15	
4	46	9.460108	10.539892	9.478975	10.521025	10.018867	9.981133	14	
5	15	9.460213	10.539787	9.479089	10.520911	10.018876	9.981124	45	
6	30	9.460317	10.539683	9.479203	10.520797	10.018886	9.981114	30	
7	45	9.460422	10.539578	9.479318	10.520682	10.018896	9.981104	15	
8	47	9.460527	10.539473	9.479432	10.520568	10.018905	9.981095	13	
9	15	9.460632	10.539368	9.479546	10.520454	10.018915	9.981085	45	
10	30	9.460736	10.539264	9.479660	10.520340	10.018924	9.981076	30	
11	45	9.460841	10.539159	9.479775	10.520225	10.018934	9.981066	15	
12	48	9.460946	10.539054	9.479889	10.520111	10.018943	9.981057	12	
13	15	9.461050	10.538950	9.480003	10.519997	10.018953	9.981047	45	
14	30	9.461155	10.538845	9.480117	10.519883	10.018962	9.981038	30	
15	45	9.461259	10.538741	9.480231	10.519769	10.018972	9.981028	15	
16	49	9.461364	10.538636	9.480345	10.519655	10.018981	9.981019	11	
17	15	9.461468	10.538532	9.480459	10.519541	10.018991	9.981009	45	
18	30	9.461573	10.538427	9.480573	10.519427	10.018999	9.981000	30	
19	45	9.461677	10.538323	9.480687	10.519313	10.019010	9.980990	15	
20	50	9.461782	10.538218	9.480801	10.519199	10.019020	9.980980	10	
21	15	9.461886	10.538114	9.480915	10.519085	10.019029	9.980971	45	
22	30	9.461990	10.538010	9.481029	10.518971	10.019039	9.980961	30	
23	45	9.462095	10.537905	9.481143	10.518857	10.019048	9.980952	15	
24	51	9.462199	10.537801	9.481257	10.518743	10.019058	9.980942	9	
25	15	9.462303	10.537697	9.481370	10.518630	10.019067	9.980933	45	
26	30	9.462407	10.537593	9.481484	10.518516	10.019077	9.980923	30	
27	45	9.462512	10.537488	9.481598	10.518402	10.019086	9.980914	15	
28	52	9.462616	10.537384	9.481712	10.518288	10.019096	9.980904	8	
29	15	9.462720	10.537280	9.481825	10.518175	10.019106	9.980894	45	
30	30	9.462824	10.537176	9.481939	10.518061	10.019115	9.980885	30	
31	45	9.462928	10.537072	9.482053	10.517947	10.019125	9.980875	15	
32	53	9.463032	10.536968	9.482167	10.517833	10.019134	9.980866	7	
33	15	9.463136	10.536864	9.482280	10.517720	10.019144	9.980856	45	
34	30	9.463240	10.536760	9.482394	10.517606	10.019154	9.980846	30	
35	45	9.463344	10.536656	9.482507	10.517493	10.019163	9.980837	15	
36	54	9.463448	10.536552	9.482621	10.517379	10.019173	9.980827	6	
37	15	9.463552	10.536448	9.482734	10.517266	10.019182	9.980818	45	
38	30	9.463656	10.536344	9.482848	10.517152	10.019192	9.980808	30	
39	45	9.463760	10.536240	9.482961	10.517039	10.019202	9.980798	15	
40	55	9.463864	10.536136	9.483075	10.516925	10.019211	9.980789	5	
41	15	9.463968	10.536032	9.483188	10.516812	10.019221	9.980779	45	
42	30	9.464071	10.535929	9.483302	10.516698	10.019230	9.980770	30	
43	45	9.464175	10.535825	9.483415	10.516585	10.019240	9.980760	15	
44	56	9.464279	10.535721	9.483529	10.516471	10.019250	9.980750	4	
45	15	9.464383	10.535617	9.483642	10.516358	10.019259	9.980741	45	
46	30	9.464486	10.535514	9.483755	10.516245	10.019269	9.980731	30	
47	45	9.464590	10.535410	9.483868	10.516132	10.019278	9.980722	15	
48	57	9.464694	10.535306	9.483982	10.516018	10.019288	9.980712	3	
49	15	9.464797	10.535203	9.484095	10.515905	10.019298	9.980702	45	
50	30	9.464901	10.535099	9.484208	10.515792	10.019307	9.980693	30	
51	45	9.465004	10.534996	9.484321	10.515679	10.019317	9.980683	15	
52	58	9.465108	10.534892	9.484435	10.515565	10.019327	9.980673	2	
53	15	9.465212	10.534788	9.484548	10.515452	10.019336	9.980664	45	
54	30	9.465315	10.534685	9.484661	10.515339	10.019346	9.980654	30	
55	45	9.465418	10.534582	9.484774	10.515226	10.019355	9.980645	15	
56	59	9.465522	10.534478	9.484887	10.515113	10.019365	9.980635	1	
57	15	9.465625	10.534375	9.485000	10.515000	10.019375	9.980625	45	
58	30	9.465729	10.534271	9.485113	10.514887	10.019384	9.980616	30	
59	45	9.465832	10.534168	9.485226	10.514774	10.019394	9.980606	15	
60	60	9.465935	10.534065	9.485339	10.514661	10.019404	9.980596	0	
sec.		sine.	coscant.	tangent	cotangent.	secant.	cosine.		
1° 58'		LOG. SINES, &c.						73 deg.	

1° 5'.		LOG. SINES, &c. (L.)						17 deg.	
sec.	min.	coscant.	tangent.	cotangent.	secant.	cosec.	sec.	min.	sec.
0	0	9.465938	10.534060	9.485339	10.514661	10.019404	9.980596	60	60
1	15	9.466039	10.533961	9.485452	10.514548	10.019413	9.980587	45	59
2	30	9.466142	10.533858	9.485565	10.514435	10.019423	9.980577	30	58
3	45	9.466245	10.533755	9.485678	10.514322	10.019433	9.980567	15	57
4	1	9.466348	10.533652	9.485791	10.514209	10.019442	9.980558	59	56
5	15	9.466451	10.533549	9.485903	10.514097	10.019452	9.980548	45	55
6	30	9.466555	10.533445	9.486016	10.513984	10.019462	9.980538	30	54
7	45	9.466658	10.533342	9.486129	10.513871	10.019471	9.980529	15	53
8	2	9.466761	10.533239	9.486242	10.513758	10.019481	9.980519	58	52
9	15	9.466864	10.533136	9.486355	10.513645	10.019491	9.980510	45	51
10	30	9.466967	10.533033	9.486467	10.513533	10.019500	9.980500	30	50
11	45	9.467070	10.532930	9.486580	10.513420	10.019510	9.980490	15	49
12	3	9.467173	10.532827	9.486693	10.513307	10.019520	9.980480	57	48
13	15	9.467276	10.532724	9.486805	10.513195	10.019529	9.980471	45	47
14	30	9.467379	10.532621	9.486918	10.513082	10.019539	9.980461	30	46
15	45	9.467482	10.532518	9.487031	10.512969	10.019549	9.980451	15	45
16	4	9.467585	10.532415	9.487143	10.512857	10.019559	9.980441	56	44
17	15	9.467688	10.532312	9.487256	10.512744	10.019568	9.980432	45	43
18	30	9.467790	10.532210	9.487368	10.512632	10.019578	9.980422	30	42
19	45	9.467893	10.532107	9.487481	10.512519	10.019588	9.980412	15	41
20	5	9.467996	10.532004	9.487593	10.512407	10.019597	9.980403	55	40
21	15	9.468099	10.531901	9.487706	10.512294	10.019607	9.980393	45	39
22	30	9.468201	10.531799	9.487818	10.512182	10.019617	9.980383	30	38
23	45	9.468304	10.531696	9.487931	10.512069	10.019626	9.980374	15	37
24	6	9.468407	10.531593	9.488043	10.511957	10.019636	9.980364	54	36
25	15	9.468509	10.531491	9.488155	10.511845	10.019646	9.980354	45	35
26	30	9.468612	10.531388	9.488268	10.511732	10.019656	9.980344	30	34
27	45	9.468715	10.531285	9.488380	10.511620	10.019665	9.980335	15	33
28	7	9.468817	10.531183	9.488492	10.511508	10.019675	9.980325	53	32
29	15	9.468920	10.531080	9.488605	10.511395	10.019685	9.980315	45	31
30	30	9.469022	10.530978	9.488717	10.511283	10.019695	9.980305	30	30
31	45	9.469125	10.530875	9.488829	10.511171	10.019704	9.980296	15	29
32	8	9.469227	10.530773	9.488941	10.511059	10.019714	9.980286	52	28
33	15	9.469330	10.530670	9.489053	10.510947	10.019724	9.980276	45	27
34	30	9.469432	10.530568	9.489166	10.510834	10.019734	9.980267	30	26
35	45	9.469535	10.530465	9.489278	10.510722	10.019743	9.980257	15	25
36	9	9.469637	10.530363	9.489390	10.510610	10.019753	9.980247	51	24
37	15	9.469739	10.530261	9.489502	10.510498	10.019763	9.980237	45	23
38	30	9.469842	10.530158	9.489614	10.510386	10.019772	9.980228	30	22
39	45	9.469944	10.530056	9.489726	10.510274	10.019782	9.980218	15	21
40	10	9.470046	10.529954	9.489838	10.510162	10.019792	9.980208	50	20
41	15	9.470148	10.529852	9.489950	10.510050	10.019802	9.980198	45	19
42	30	9.470250	10.529750	9.490062	10.509938	10.019811	9.980189	30	18
43	45	9.470353	10.529647	9.490174	10.509826	10.019821	9.980179	15	17
44	11	9.470455	10.529545	9.490286	10.509714	10.019831	9.980169	49	16
45	15	9.470557	10.529443	9.490398	10.509602	10.019841	9.980159	45	15
46	30	9.470659	10.529341	9.490510	10.509490	10.019851	9.980149	30	14
47	45	9.470761	10.529239	9.490621	10.509379	10.019860	9.980140	15	13
48	12	9.470863	10.529137	9.490733	10.509267	10.019870	9.980130	48	12
49	15	9.470965	10.529035	9.490845	10.509155	10.019880	9.980120	45	11
50	30	9.471067	10.528933	9.490957	10.509043	10.019890	9.980110	30	10
51	45	9.471169	10.528831	9.491068	10.508932	10.019899	9.980101	15	9
52	13	9.471271	10.528729	9.491180	10.508820	10.019909	9.980091	47	8
53	15	9.471373	10.528627	9.491292	10.508708	10.019919	9.980081	45	7
54	30	9.471475	10.528525	9.491404	10.508596	10.019929	9.980071	30	6
55	45	9.471577	10.528423	9.491515	10.508485	10.019939	9.980061	15	5
56	14	9.471678	10.528322	9.491627	10.508373	10.019948	9.980052	46	4
57	15	9.471780	10.528220	9.491738	10.508262	10.019958	9.980042	45	3
58	30	9.471882	10.528118	9.491850	10.508150	10.019969	9.980032	30	2
59	45	9.471984	10.528016	9.491962	10.508038	10.019978	9.980022	15	1
60	15	9.472086	10.527914	9.492073	10.507927	10.019988	9.980012	45	0
sec.	min.	coscant.	cotangent.	tangent.	secant.	cosec.	sec.	min.	sec.

4° 51'.

LOG. SINES, &c

72 deg.

1° 27'		LOG. SINES, &c. (1)						17 deg.	
sec.	min.	sine.	coscant.	tangent.	cotangent.	secant.	cosecant.	sec.	min.
0	15	9.472086	10.527914	9.492073	10.507927	10.019988	9.980012	45	60
1	15	9.472157	10.527843	9.492185	10.507815	10.019997	9.980003	45	59
2	30	9.472289	10.527711	9.492296	10.507704	10.020007	9.979993	30	58
3	■	9.472391	10.527609	9.492408	10.507592	10.020017	9.979983	15	■
4	16	9.472492	10.527508	9.492519	10.507481	10.020027	9.979974	44	56
5	15	9.472594	10.527406	9.492630	10.507370	10.020037	9.979963	45	55
6	■	9.472695	10.527305	9.492742	10.507258	10.020046	9.979954	30	54
7	45	9.472797	10.527203	9.492853	10.507147	10.020056	9.979944	15	53
8	17	9.472898	10.527102	9.492965	10.507035	10.020066	9.979934	43	52
9	15	9.473000	10.527000	9.493076	10.506924	10.020076	9.979924	45	51
10	30	9.473101	10.526899	9.493187	10.506813	10.020086	9.979914	30	■
11	45	9.473203	10.526797	9.493298	10.506702	10.020096	9.979904	15	49
12	18	9.473304	10.526696	9.493410	10.506590	10.020105	9.979895	42	48
13	15	9.473406	10.526594	9.493521	10.506479	10.020115	9.979885	45	47
14	■	9.473507	10.526493	9.493632	10.506368	10.020125	9.979875	30	46
15	■	9.473608	10.526392	9.493743	10.506257	10.020135	9.979865	15	45
16	19	9.473710	10.526290	9.493854	10.506146	10.020145	9.979855	41	44
17	15	9.473811	10.526189	9.493966	10.506034	10.020155	9.979845	45	43
18	30	9.473912	10.526088	9.494077	10.505923	10.020165	9.979835	30	42
■	45	9.474013	10.525987	9.494188	10.505812	10.020174	9.979826	15	41
20	20	9.474115	10.525885	9.494299	10.505701	10.020184	9.979816	40	■
21	15	9.474216	10.525784	9.494410	10.505590	10.020194	9.979806	45	39
22	30	9.474317	10.525683	9.494521	10.505479	10.020204	9.979796	30	■
23	45	9.474418	10.525582	9.494632	10.505368	10.020214	9.979786	15	37
24	21	9.474519	10.525481	9.494743	10.505257	10.020224	9.979776	39	36
25	■	9.474620	10.525380	9.494854	10.505146	10.020234	9.979766	45	35
26	■	9.474721	10.525279	9.494965	10.505035	10.020243	9.979757	30	34
27	45	9.474822	10.525178	9.495076	10.504924	10.020253	9.979747	15	33
28	22	9.474923	10.525077	9.495186	10.504814	10.020263	9.979737	38	32
■	15	9.475024	10.524976	9.495297	10.504703	10.020273	9.979727	45	31
30	30	9.475125	10.524875	9.495408	10.504592	10.020283	9.979717	30	30
31	45	9.475226	10.524774	9.495519	10.504481	10.020293	9.979707	15	29
32	23	9.475327	10.524673	9.495630	10.504370	10.020303	9.979697	37	28
33	15	9.475428	10.524572	9.495740	10.504260	10.020313	9.979687	45	27
34	30	9.475529	10.524471	9.495851	10.504149	10.020322	9.979678	30	26
35	45	9.475630	10.524370	9.495962	10.504038	10.020332	9.979668	15	25
36	24	9.475730	10.524270	9.496073	10.503927	10.020342	9.979658	36	24
37	15	9.475831	10.524169	9.496183	10.503817	10.020352	9.979648	45	23
38	30	9.475932	10.524068	9.496294	10.503706	10.020362	9.979638	30	22
39	45	9.476033	10.523967	9.496405	10.503595	10.020372	9.979628	15	21
40	25	9.476133	10.523867	9.496515	10.503485	10.020382	9.979618	35	20
41	15	9.476234	10.523766	9.496626	10.503374	10.020392	9.979608	45	19
42	30	9.476335	10.523665	9.496736	10.503264	10.020402	9.979598	■	18
43	45	9.476435	10.523565	9.496847	10.503153	10.020412	9.979588	15	17
44	26	9.476536	10.523464	9.496957	10.503043	10.020422	9.979578	34	16
45	15	9.476636	10.523364	9.497068	10.502932	10.020431	9.979568	45	15
46	30	9.476737	10.523263	9.497178	10.502822	10.020441	9.979558	30	14
47	45	9.476837	10.523163	9.497289	10.502711	10.020451	9.979548	15	13
48	27	9.476938	10.523062	9.497399	10.502601	10.020461	9.979538	33	■
49	15	9.477038	10.522962	9.497509	10.502491	10.020471	9.979528	45	11
50	30	9.477139	10.522861	9.497620	10.502380	10.020481	9.979518	30	10
51	45	9.477239	10.522761	9.497730	10.502270	10.020491	9.979508	15	9
52	28	9.477340	10.522660	9.497841	10.502159	10.020501	9.979498	■	8
53	15	9.477440	10.522560	9.497951	10.502049	10.020511	9.979488	45	7
54	30	9.477540	10.522460	9.498061	10.501939	10.020521	9.979478	30	6
55	45	9.477641	10.522359	9.498171	10.501829	10.020531	9.979468	15	5
56	29	9.477741	10.522259	9.498282	10.501718	10.020541	9.979458	31	4
57	15	9.477841	10.522159	9.498392	10.501608	10.020551	9.979448	45	3
58	30	9.477941	10.522059	9.498502	10.501498	10.020561	9.979438	■	2
59	45	9.478042	10.521958	9.498612	10.501388	10.020571	9.979428	15	1
60	30	9.478142	10.521858	9.498722	10.501278	10.020581	9.979418	30	0
sec.	min.	sine.	coscant.	tangent.	cotangent.	secant.	cosecant.	sec.	min.
4° 50'		LOG. SINES, &c.						72 deg.	

1° 10'		LOG. SINES, &c. (L.)						17 deg	
deg.	'	sine.	coscant.	tangent.	cotangent.	secant.	cosec.	'	sec.
0	30	9.478142	10.521858	9.498722	10.501278	10.020581	9.979419	30	60
1	15	9.478242	10.521758	9.498832	10.501168	10.020591	9.979409	45	59
2	30	9.478342	10.521658	9.498942	10.501058	10.020600	9.979400	30	58
3	45	9.478442	10.521558	9.499053	10.500947	10.020610	9.979390	15	57
4	31	9.478642	10.521458	9.499163	10.500837	10.020620	9.979380	29	56
5	15	9.478642	10.521358	9.499273	10.500727	10.020630	9.979370	45	55
6	30	9.478742	10.521258	9.499383	10.500617	10.020640	9.979360	30	54
7	45	9.478842	10.521158	9.499493	10.500507	10.020650	9.979350	15	53
8	32	9.478942	10.521058	9.499603	10.500397	10.020660	9.979340	28	52
9	15	9.479042	10.520958	9.499712	10.500288	10.020670	9.979330	45	51
10	30	9.479142	10.520858	9.499822	10.500178	10.020680	9.979320	30	50
11	45	9.479242	10.520758	9.499932	10.500068	10.020690	9.979310	15	49
12	33	9.479342	10.520658	9.500042	10.499958	10.020700	9.979300	27	48
13	15	9.479442	10.520558	9.500152	10.499848	10.020710	9.979290	45	47
14	30	9.479542	10.520458	9.500262	10.499738	10.020720	9.979280	30	46
15	45	9.479642	10.520358	9.500372	10.499628	10.020730	9.979270	15	45
16	34	9.479741	10.520259	9.500481	10.499519	10.020740	9.979260	26	44
17	15	9.479841	10.520159	9.500591	10.499409	10.020750	9.979250	45	43
18	30	9.479941	10.520059	9.500701	10.499299	10.020760	9.979240	30	42
19	45	9.480040	10.519960	9.500811	10.499189	10.020770	9.979230	15	41
20	35	9.480140	10.519860	9.500920	10.499080	10.020780	9.979220	25	40
21	15	9.480240	10.519760	9.501030	10.498970	10.020790	9.979210	45	39
22	30	9.480339	10.519661	9.501140	10.498860	10.020800	9.979200	30	38
23	45	9.480439	10.519561	9.501249	10.498751	10.020810	9.979190	15	37
24	36	9.480538	10.519462	9.501359	10.498641	10.020820	9.979180	24	36
25	15	9.480638	10.519362	9.501468	10.498532	10.020830	9.979170	45	35
26	30	9.480738	10.519262	9.501578	10.498422	10.020840	9.979160	30	34
27	45	9.480837	10.519163	9.501687	10.498313	10.020850	9.979150	15	33
28	37	9.480937	10.519063	9.501797	10.498203	10.020860	9.979140	23	32
29	15	9.481036	10.518964	9.501906	10.498094	10.020870	9.979130	45	31
30	30	9.481135	10.518865	9.502016	10.497984	10.020880	9.979120	30	30
31	45	9.481235	10.518765	9.502125	10.497875	10.020890	9.979110	15	29
32	38	9.481334	10.518666	9.502235	10.497765	10.020900	9.979100	22	28
33	15	9.481434	10.518566	9.502344	10.497656	10.020911	9.979089	45	27
34	30	9.481533	10.518467	9.502453	10.497547	10.020921	9.979079	30	26
35	45	9.481632	10.518368	9.502563	10.497437	10.020931	9.979069	15	25
36	39	9.481731	10.518269	9.502672	10.497328	10.020941	9.979059	21	24
37	15	9.481831	10.518169	9.502781	10.497219	10.020951	9.979049	45	23
38	30	9.481930	10.518070	9.502891	10.497109	10.020961	9.979039	30	22
39	45	9.482029	10.517971	9.503000	10.497000	10.020971	9.979029	15	21
40	40	9.482128	10.517872	9.503109	10.496891	10.020981	9.979019	20	20
41	15	9.482227	10.517773	9.503218	10.496782	10.020991	9.979009	45	19
42	30	9.482327	10.517673	9.503328	10.496672	10.021001	9.978999	30	18
43	45	9.482426	10.517574	9.503437	10.496563	10.021011	9.978989	15	17
44	41	9.482525	10.517475	9.503546	10.496454	10.021021	9.978979	19	16
45	15	9.482624	10.517376	9.503655	10.496345	10.021031	9.978969	45	15
46	30	9.482723	10.517277	9.503764	10.496236	10.021041	9.978959	30	14
47	45	9.482822	10.517178	9.503873	10.496127	10.021051	9.978949	15	13
48	42	9.482921	10.517079	9.503982	10.496018	10.021061	9.978939	18	12
49	15	9.483020	10.516980	9.504091	10.495909	10.021072	9.978928	45	11
50	30	9.483119	10.516881	9.504200	10.495800	10.021082	9.978918	30	10
51	45	9.483218	10.516782	9.504309	10.495691	10.021092	9.978908	15	9
52	43	9.483316	10.516684	9.504418	10.495582	10.021102	9.978899	17	8
53	15	9.483415	10.516585	9.504527	10.495473	10.021112	9.978888	45	7
54	30	9.483514	10.516486	9.504636	10.495364	10.021122	9.978878	30	6
55	45	9.483613	10.516387	9.504745	10.495255	10.021132	9.978868	15	5
56	44	9.483712	10.516288	9.504854	10.495146	10.021142	9.978858	16	4
57	15	9.483810	10.516190	9.504963	10.495037	10.021152	9.978848	45	3
58	30	9.483909	10.516091	9.505071	10.494929	10.021162	9.978838	30	2
59	45	9.484008	10.515992	9.505180	10.494820	10.021172	9.978828	15	1
60	45	9.484107	10.515893	9.505289	10.494711	10.021183	9.978817	15	0
deg.	'	sine.	coscant.	tangent.	cotangent.	secant.	cosec.	'	sec.
4° 49'		LOG. SINES, &c.						21 deg.	

1° 11'.		LOG. SINES, &c. (t)						17 deg.	
sec.	"	sine.	coscant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	45	9.484107	10.515893	9.505289	10.494711	10.021183	9.978817	15	60
1	15	9.484205	10.515795	9.505398	10.494602	10.021193	9.978807	45	59
2	30	9.484304	10.515696	9.505507	10.494493	10.021203	9.978797	30	58
3	45	9.484402	10.515598	9.505615	10.494385	10.021213	9.978787	15	57
4	46	9.484501	10.515499	9.505724	10.494276	10.021223	9.978777	14	56
5	15	9.484600	10.515400	9.505833	10.494167	10.021233	9.978767	43	55
6	30	9.484698	10.515302	9.505941	10.494059	10.021243	9.978757	30	54
7	45	9.484797	10.515203	9.506050	10.493950	10.021253	9.978747	15	53
8	47	9.484895	10.515105	9.506159	10.493841	10.021264	9.978736	13	52
9	15	9.484994	10.515006	9.506267	10.493733	10.021274	9.978726	45	51
10	30	9.485092	10.514908	9.506376	10.493624	10.021284	9.978716	30	50
11	45	9.485190	10.514810	9.506484	10.493516	10.021294	9.978706	15	49
12	48	9.485289	10.514711	9.506593	10.493407	10.021304	9.978696	12	48
13	15	9.485387	10.514613	9.506701	10.493299	10.021314	9.978686	45	47
14	30	9.485485	10.514515	9.506810	10.493190	10.021324	9.978676	30	46
15	45	9.485584	10.514416	9.506918	10.493082	10.021335	9.978665	15	45
16	49	9.485682	10.514318	9.507027	10.492973	10.021345	9.978655	11	44
17	15	9.485780	10.514220	9.507135	10.492865	10.021355	9.978645	45	43
18	30	9.485878	10.514122	9.507243	10.492757	10.021365	9.978635	30	42
19	45	9.485977	10.514023	9.507352	10.492648	10.021375	9.978625	15	41
20	50	9.486075	10.513925	9.507460	10.492540	10.021385	9.978615	10	40
21	15	9.486173	10.513827	9.507568	10.492432	10.021395	9.978605	45	39
22	30	9.486271	10.513729	9.507677	10.492323	10.021406	9.978594	30	38
23	45	9.486369	10.513631	9.507785	10.492215	10.021416	9.978584	15	37
24	51	9.486467	10.513533	9.507893	10.492107	10.021426	9.978574	9	36
25	15	9.486565	10.513435	9.508002	10.491998	10.021436	9.978564	45	35
26	30	9.486663	10.513337	9.508110	10.491890	10.021446	9.978554	30	34
27	45	9.486761	10.513239	9.508218	10.491782	10.021456	9.978544	15	33
28	52	9.486859	10.513141	9.508326	10.491674	10.021467	9.978533	11	32
29	15	9.486957	10.513043	9.508434	10.491566	10.021477	9.978523	45	31
30	30	9.487055	10.512945	9.508542	10.491458	10.021487	9.978513	30	30
31	45	9.487153	10.512847	9.508650	10.491350	10.021497	9.978503	15	29
32	53	9.487251	10.512749	9.508759	10.491241	10.021507	9.978493	7	28
33	15	9.487349	10.512651	9.508867	10.491133	10.021518	9.978482	45	27
34	30	9.487447	10.512553	9.508975	10.491025	10.021528	9.978472	30	26
35	45	9.487545	10.512455	9.509083	10.490917	10.021538	9.978462	15	25
36	54	9.487643	10.512357	9.509191	10.490809	10.021548	9.978452	6	24
37	15	9.487740	10.512260	9.509299	10.490701	10.021558	9.978442	45	23
38	30	9.487838	10.512162	9.509407	10.490593	10.021569	9.978431	30	22
39	45	9.487936	10.512064	9.509514	10.490486	10.021579	9.978421	15	21
40	55	9.488033	10.511967	9.509622	10.490378	10.021589	9.978411	11	20
41	15	9.488131	10.511869	9.509730	10.490270	10.021599	9.978401	45	19
42	30	9.488229	10.511771	9.509838	10.490162	10.021609	9.978391	30	18
43	45	9.488326	10.511674	9.509946	10.490054	10.021620	9.978380	15	17
44	56	9.488424	10.511576	9.510054	10.489946	10.021630	9.978370	4	16
45	15	9.488522	10.511478	9.510162	10.489838	10.021640	9.978360	45	15
46	30	9.488619	10.511381	9.510269	10.489731	10.021650	9.978350	30	14
47	45	9.488717	10.511283	9.510377	10.489623	10.021661	9.978339	15	13
48	57	9.488814	10.511186	9.510485	10.489515	10.021671	9.978329	3	12
49	15	9.488912	10.511088	9.510593	10.489407	10.021681	9.978319	45	11
50	30	9.489009	10.510991	9.510700	10.489300	10.021691	9.978309	30	10
51	45	9.489107	10.510893	9.510808	10.489192	10.021701	9.978299	15	9
52	58	9.489204	10.510796	9.510916	10.489084	10.021712	9.978288	2	8
53	15	9.489301	10.510699	9.511023	10.488977	10.021722	9.978278	45	7
54	30	9.489399	10.510601	9.511131	10.488869	10.021732	9.978268	30	6
55	45	9.489496	10.510504	9.511238	10.488762	10.021742	9.978258	15	5
56	59	9.489593	10.510407	9.511346	10.488654	10.021753	9.978247	1	4
57	15	9.489691	10.510309	9.511454	10.488546	10.021763	9.978237	45	3
58	30	9.489788	10.510212	9.511561	10.488439	10.021773	9.978227	30	2
59	45	9.489885	10.510115	9.511669	10.488331	10.021783	9.978217	15	1
60	60	9.489982	10.510018	9.511776	10.488224	10.021794	9.978206	0	0
sec.	"	sine.	coscant.	tangent.	cotangent.	secant.	cosine.	"	sec.
4° 48'.		LOG. SINES, &c.						72 deg.	

1° 12'		LOG. SINES, &c. (L)						1E deg.	
sec.		sine.	coscant.	tangent.	cotangent.	secant.	cosecant.		sec.
0	0	9.489982	10.510018	9.511776	10.488224	10.021794	9.978206	60	60
1	15	9.490080	10.509920	9.511883	10.488117	10.021804	9.978196	55	59
2	30	9.490177	10.509823	9.511991	10.488009	10.021814	9.978186	50	58
3	45	9.490274	10.509726	9.512098	10.487902	10.021825	9.978175	45	57
4	1	9.490371	10.509629	9.512206	10.487794	10.021835	9.978165	59	56
5	15	9.490468	10.509532	9.512313	10.487687	10.021845	9.978155	54	55
6	30	9.490565	10.509435	9.512420	10.487580	10.021855	9.978145	49	54
7	45	9.490662	10.509338	9.512528	10.487472	10.021866	9.978134	44	53
8	2	9.490759	10.509241	9.512635	10.487365	10.021876	9.978124	58	52
9	15	9.490856	10.509144	9.512742	10.487258	10.021886	9.978114	53	51
10	30	9.490953	10.509047	9.512850	10.487150	10.021896	9.978104	48	50
11	45	9.491050	10.508950	9.512957	10.487043	10.021907	9.978093	43	49
12	3	9.491147	10.508853	9.513064	10.486936	10.021917	9.978083	57	48
13	15	9.491244	10.508756	9.513171	10.486829	10.021927	9.978073	52	47
14	30	9.491341	10.508659	9.513278	10.486722	10.021938	9.978062	47	46
15	45	9.491438	10.508562	9.513386	10.486614	10.021948	9.978052	42	45
16	4	9.491534	10.508466	9.513493	10.486507	10.021958	9.978042	56	44
17	13	9.491631	10.508369	9.513600	10.486400	10.021969	9.978031	51	43
18	27	9.491728	10.508272	9.513707	10.486293	10.021979	9.978021	46	42
19	45	9.491825	10.508175	9.513814	10.486186	10.021989	9.978011	41	41
20	5	9.491922	10.508078	9.513921	10.486079	10.021999	9.978001	55	40
21	15	9.492018	10.507982	9.514028	10.485972	10.022010	9.977990	50	39
22	30	9.492115	10.507885	9.514135	10.485865	10.022020	9.977980	45	38
23	45	9.492212	10.507788	9.514242	10.485758	10.022030	9.977970	40	37
24	6	9.492308	10.507692	9.514349	10.485651	10.022041	9.977959	54	36
25	15	9.492405	10.507595	9.514456	10.485544	10.022051	9.977949	49	35
26	30	9.492501	10.507499	9.514563	10.485437	10.022061	9.977939	44	34
27	45	9.492598	10.507402	9.514670	10.485330	10.022072	9.977928	39	33
28	7	9.492695	10.507305	9.514777	10.485223	10.022082	9.977918	53	32
29	11	9.492791	10.507209	9.514883	10.485117	10.022092	9.977908	48	31
30	30	9.492888	10.507112	9.514990	10.485010	10.022103	9.977897	43	30
31	45	9.492984	10.507016	9.515097	10.484903	10.022113	9.977887	38	29
32	8	9.493081	10.506919	9.515204	10.484796	10.022123	9.977877	52	28
33	15	9.493177	10.506823	9.515311	10.484689	10.022134	9.977866	47	27
34	27	9.493273	10.506727	9.515417	10.484583	10.022144	9.977856	42	26
35	45	9.493370	10.506630	9.515524	10.484476	10.022154	9.977846	37	25
36	1	9.493466	10.506534	9.515631	10.484369	10.022165	9.977835	51	24
37	15	9.493562	10.506438	9.515738	10.484262	10.022175	9.977825	46	23
38	27	9.493659	10.506341	9.515844	10.484156	10.022186	9.977814	41	22
39	45	9.493755	10.506245	9.515951	10.484049	10.022196	9.977804	36	21
40	10	9.493851	10.506149	9.516057	10.483943	10.022206	9.977794	50	20
41	15	9.493947	10.506053	9.516164	10.483836	10.022217	9.977783	45	19
42	30	9.494044	10.505956	9.516271	10.483729	10.022227	9.977773	40	18
43	45	9.494140	10.505860	9.516377	10.483623	10.022237	9.977763	35	17
44	11	9.494236	10.505764	9.516484	10.483516	10.022248	9.977752	49	16
45	15	9.494332	10.505668	9.516590	10.483410	10.022258	9.977742	44	15
46	27	9.494428	10.505572	9.516697	10.483303	10.022268	9.977732	39	14
47	45	9.494524	10.505476	9.516803	10.483197	10.022279	9.977721	34	13
48	12	9.494620	10.505380	9.516910	10.483090	10.022289	9.977711	48	12
49	15	9.494717	10.505283	9.517016	10.482984	10.022300	9.977700	43	11
50	30	9.494813	10.505187	9.517123	10.482877	10.022310	9.977690	38	10
51	45	9.494909	10.505091	9.517229	10.482771	10.022320	9.977680	33	9
52	13	9.495005	10.504995	9.517335	10.482665	10.022331	9.977669	47	8
53	15	9.495100	10.504900	9.517442	10.482558	10.022341	9.977659	42	7
54	30	9.495196	10.504804	9.517548	10.482452	10.022352	9.977648	37	6
55	45	9.495292	10.504708	9.517654	10.482346	10.022362	9.977638	32	5
56	14	9.495388	10.504612	9.517761	10.482239	10.022372	9.977628	46	4
57	15	9.495484	10.504516	9.517867	10.482133	10.022383	9.977617	41	3
58	30	9.495580	10.504420	9.517973	10.482027	10.022393	9.977607	36	2
59	45	9.495676	10.504324	9.518079	10.481921	10.022404	9.977596	31	1
60	15	9.495772	10.504228	9.518185	10.481815	10.022414	9.977586	45	0
sec.		sine.	coscant.	tangent.	cotangent.	secant.	cosecant.		sec.

1° 13'.		LOG. SINES, &c. (L.)					18 deg.		
sec.	min.	cosant.	tangent.	colangent.	secant.	cosec.	sec.		
0	15	9.495772	10.504228	9.518185	10.481815	10.022414	9.977586	45	60
1	15	9.495867	10.504133	9.518292	10.481708	10.022424	9.977576	45	59
2	30	9.495963	10.504037	9.518398	10.481602	10.022435	9.977565	30	58
3	45	9.496059	10.503941	9.518504	10.481496	10.022445	9.977555	15	57
4	16	9.496154	10.503846	9.518610	10.481390	10.022456	9.977544	44	56
5	15	9.496250	10.503750	9.518716	10.481284	10.022466	9.977534	45	55
6	30	9.496346	10.503654	9.518822	10.481178	10.022477	9.977523	30	54
7	45	9.496441	10.503559	9.518928	10.481072	10.022487	9.977513	15	53
8	17	9.496537	10.503463	9.519034	10.480966	10.022497	9.977503	43	52
9	15	9.496633	10.503367	9.519140	10.480860	10.022508	9.977492	45	51
10	30	9.496728	10.503272	9.519246	10.480754	10.022518	9.977482	30	50
11	45	9.496824	10.503176	9.519352	10.480648	10.022529	9.977471	15	49
12	18	9.496919	10.503081	9.519458	10.480542	10.022539	9.977461	42	48
13	15	9.497015	10.502985	9.519564	10.480436	10.022550	9.977450	45	47
14	30	9.497110	10.502890	9.519670	10.480330	10.022560	9.977440	30	46
15	45	9.497206	10.502794	9.519776	10.480224	10.022571	9.977429	15	45
16	19	9.497301	10.502699	9.519882	10.480118	10.022581	9.977419	41	44
17	15	9.497396	10.502604	9.519988	10.480012	10.022591	9.977409	45	43
18	30	9.497492	10.502508	9.520094	10.479906	10.022602	9.977398	30	42
19	45	9.497587	10.502413	9.520199	10.479801	10.022612	9.977388	15	41
20	20	9.497682	10.502318	9.520305	10.479695	10.022623	9.977377	40	40
21	15	9.497778	10.502222	9.520411	10.479589	10.022633	9.977367	45	39
22	30	9.497873	10.502127	9.520517	10.479483	10.022644	9.977356	30	38
23	45	9.497968	10.502032	9.520622	10.479378	10.022654	9.977346	15	37
24	21	9.498063	10.501937	9.520728	10.479272	10.022665	9.977335	39	36
25	15	9.498159	10.501841	9.520834	10.479166	10.022675	9.977325	45	35
26	30	9.498254	10.501746	9.520939	10.479061	10.022686	9.977314	30	34
27	45	9.498349	10.501651	9.521045	10.478955	10.022696	9.977304	15	33
28	22	9.498444	10.501556	9.521151	10.478849	10.022707	9.977293	44	32
29	15	9.498539	10.501461	9.521256	10.478744	10.022717	9.977283	45	31
30	30	9.498634	10.501366	9.521362	10.478638	10.022728	9.977272	30	30
31	45	9.498729	10.501271	9.521467	10.478533	10.022738	9.977262	15	29
32	23	9.498824	10.501176	9.521573	10.478427	10.022749	9.977251	37	28
33	15	9.498919	10.501081	9.521679	10.478321	10.022759	9.977241	45	27
34	30	9.499014	10.500986	9.521784	10.478216	10.022770	9.977230	30	26
35	45	9.499109	10.500891	9.521889	10.478111	10.022780	9.977220	15	25
36	24	9.499204	10.500796	9.521995	10.478005	10.022791	9.977209	44	24
37	15	9.499299	10.500701	9.522100	10.477900	10.022801	9.977199	45	23
38	30	9.499394	10.500606	9.522206	10.477794	10.022812	9.977188	30	22
39	45	9.499489	10.500511	9.522311	10.477689	10.022822	9.977178	15	21
40	25	9.499584	10.500416	9.522417	10.477583	10.022833	9.977167	35	20
41	15	9.499679	10.500321	9.522522	10.477478	10.022843	9.977157	45	19
42	30	9.499774	10.500226	9.522627	10.477373	10.022854	9.977146	30	18
43	45	9.499868	10.500132	9.522733	10.477267	10.022864	9.977136	15	17
44	26	9.499963	10.500037	9.522838	10.477162	10.022875	9.977125	34	16
45	15	9.500058	10.499942	9.522943	10.477057	10.022885	9.977115	45	15
46	30	9.500153	10.499847	9.523048	10.476952	10.022896	9.977104	30	14
47	45	9.500247	10.499753	9.523154	10.476846	10.022906	9.977094	15	13
48	27	9.500342	10.499658	9.523259	10.476741	10.022917	9.977083	44	12
49	15	9.500437	10.499563	9.523364	10.476636	10.022927	9.977073	45	11
50	30	9.500531	10.499469	9.523469	10.476531	10.022938	9.977062	30	10
51	45	9.500626	10.499374	9.523574	10.476426	10.022948	9.977052	15	9
52	28	9.500721	10.499279	9.523679	10.476321	10.022959	9.977041	32	8
53	15	9.500815	10.499185	9.523785	10.476215	10.022970	9.977030	45	7
54	30	9.500910	10.499090	9.523890	10.476110	10.022980	9.977020	30	6
55	45	9.501004	10.498996	9.523995	10.476005	10.022991	9.977009	15	5
56	29	9.501099	10.498901	9.524100	10.475900	10.023001	9.976999	31	4
57	15	9.501193	10.498807	9.524205	10.475795	10.023012	9.976988	45	3
58	30	9.501288	10.498712	9.524310	10.475690	10.023022	9.976978	30	2
59	45	9.501382	10.498618	9.524415	10.475585	10.023033	9.976967	15	1
60	30	9.501476	10.498524	9.524520	10.475480	10.023043	9.976957	30	0
sec.		cosec.	tangent.	colangent.	tangent.	cosecant.	sine.		sec.
4° 46'.		LOG. SINES, &c.					71 deg.		

1° 14'		LOG. SINES, &c. (L)						18 deg.	
sec.	min.	sine	cosine	tangent	cotangent	secant	cosecant	sec.	min.
0	30	9.501478	10.498524	9.524520	10.475480	10.023043	9.976957	30	60
1	15	9.501571	10.498429	9.524625	10.475375	10.023054	9.976946	45	59
2	■	9.501665	10.498335	9.524730	10.475270	10.023065	9.976935	36	58
3	45	9.501759	10.498241	9.524835	10.475165	10.023075	9.976925	15	57
4	31	9.501854	10.498146	9.524939	10.475061	10.023086	9.976914	29	56
5	15	9.501948	10.498052	9.525044	10.474956	10.023096	9.976904	■	55
6	30	9.502042	10.497958	9.525149	10.474851	10.023107	9.976893	30	■
7	45	9.502137	10.497863	9.525254	10.474746	10.023118	9.976882	15	■
8	32	9.502231	10.497769	9.525359	10.474641	10.023128	9.976872	28	52
9	15	9.502325	10.497675	9.525464	10.474536	10.023139	9.976861	45	51
10	30	9.502419	10.497581	9.525568	10.474432	10.023149	9.976851	■	■
11	45	9.502513	10.497487	9.525673	10.474327	10.023160	9.976840	15	49
12	33	9.502607	10.497393	9.525778	10.474222	10.023170	9.976830	27	■
13	15	9.502702	10.497298	9.525883	10.474117	10.023181	9.976819	45	47
14	30	9.502796	10.497204	9.525987	10.474013	10.023192	9.976808	30	46
15	45	9.502890	10.497110	9.526092	10.473908	10.023202	9.976798	15	45
16	34	9.502984	10.497016	9.526197	10.473803	10.023213	9.976787	26	44
17	15	9.503078	10.496922	9.526301	10.473699	10.023223	9.976777	■	43
18	30	9.503172	10.496828	9.526406	10.473594	10.023234	9.976766	30	■
19	45	9.503266	10.496734	9.526510	10.473490	10.023245	9.976755	15	41
20	35	9.503360	10.496640	9.526615	10.473385	10.023255	9.976745	25	■
21	15	9.503454	10.496546	9.526719	10.473281	10.023266	9.976734	45	39
22	30	9.503547	10.496453	9.526824	10.473176	10.023277	9.976723	■	38
23	45	9.503641	10.496359	9.526929	10.473071	10.023287	9.976713	15	37
24	36	9.503735	10.496265	9.527033	10.472967	10.023298	9.976702	24	36
25	15	■	10.496171	9.527137	10.472863	10.023308	9.976692	45	35
26	30	9.503923	10.496077	9.527242	10.472758	10.023319	9.976681	30	34
27	45	9.504017	10.495983	9.527346	10.472654	10.023330	9.976670	15	33
28	37	9.504110	10.495890	9.527451	10.472549	10.023340	9.976660	23	32
29	15	9.504204	10.495796	9.527555	10.472445	10.023351	9.976649	45	31
30	30	9.504298	10.495702	9.527659	10.472341	10.023362	9.976638	■	30
31	■	9.504392	10.495608	9.527764	10.472236	10.023372	9.976628	15	29
32	38	9.504485	10.495515	9.527868	10.472132	10.023383	9.976617	22	26
33	15	9.504579	10.495421	9.527972	10.472028	10.023394	9.976606	45	27
34	■	9.504673	10.495327	9.528077	10.471923	10.023404	9.976596	30	26
35	45	9.504766	10.495234	9.528181	10.471819	10.023415	9.976585	15	25
36	39	9.504860	10.495140	9.528285	10.471715	10.023426	9.976574	21	24
37	15	9.504953	10.495047	9.528389	10.471611	10.023436	9.976563	45	23
38	■	9.505047	10.494953	9.528494	10.471506	10.023447	9.976553	30	22
39	45	9.505140	10.494860	9.528598	10.471402	10.023458	9.976542	15	21
40	40	9.505234	10.494766	9.528702	10.471298	10.023468	9.976532	20	20
41	15	9.505327	10.494673	9.528806	10.471194	10.023479	9.976521	45	19
42	30	9.505421	10.494579	9.528910	10.471090	10.023490	9.976510	30	18
43	45	9.505514	10.494486	9.529014	10.470986	10.023500	9.976500	15	17
44	41	9.505608	10.494392	9.529119	10.470881	10.023511	9.976489	19	16
45	15	9.505701	10.494299	9.529223	10.470777	10.023522	9.976478	45	15
46	30	9.505794	10.494206	9.529327	10.470673	10.023532	9.976467	30	14
47	45	9.505888	10.494112	9.529431	10.470569	10.023543	9.976457	15	13
48	42	9.505981	10.494019	9.529535	10.470465	10.023554	9.976446	18	12
49	15	9.506074	10.493926	9.529639	10.470361	10.023564	9.976436	45	11
50	30	9.506168	10.493832	9.529743	10.470257	10.023575	9.976425	■	10
51	45	9.506261	10.493739	9.529847	10.470153	10.023586	9.976414	15	9
52	43	9.506354	10.493646	9.529950	10.470050	10.023596	9.976404	17	8
53	15	9.506447	10.493553	9.530054	10.469946	10.023607	9.976393	45	7
54	30	9.506541	10.493459	9.530158	10.469842	10.023618	9.976382	30	6
55	45	9.506634	10.493366	9.530262	10.469738	10.023629	9.976371	15	■
56	44	9.506727	10.493273	9.530366	10.469634	10.023639	9.976361	16	■
57	15	9.506820	10.493180	9.530470	10.469530	10.023650	9.976350	45	3
58	■	9.506913	10.493087	9.530574	10.469426	10.023661	9.976339	■	■
59	45	■	10.492994	■	10.469323	10.023671	9.976329	15	1
60	45	9.507099	10.492901	9.530791	10.469219	10.023682	9.976318	15	0
sec.	min.	sine.	cosine.	tangent.	cotangent.	secant.	cosecant.	sec.	min.
4° 45'		LOG. SINES, &c.						71 deg.	

1° 15'.		LOG. SINES, &c. (L.)						18 deg.	
sec.	"	sine.	coscant.	tangent.	cotangent.	secant.	cosec.	"	sec.
0	45	9.507009	10.492901	9.530781	10.469219	10.023682	9.976318	15	80
1	15	9.507192	10.492808	9.530885	10.469115	10.023693	9.976307	45	59
2	30	9.507385	10.492715	9.530989	10.469011	10.023704	9.976296	■	58
3	45	9.507578	10.492622	9.531092	10.468908	10.023714	9.976286	15	57
4	46	9.507771	10.492529	9.531196	10.468804	10.023726	9.976275	14	56
5	15	9.507964	10.492436	9.531300	10.468700	10.023736	9.976264	45	55
6	30	9.508157	10.492343	9.531403	10.468597	10.023746	9.976254	30	54
7	45	9.508350	10.492250	9.531507	10.468493	10.023757	9.976243	15	53
8	47	9.508543	10.492157	9.531611	10.468389	10.023768	9.976232	13	52
9	15	9.508736	10.492064	9.531714	10.468286	10.023779	9.976221	45	51
10	30	9.508928	10.491972	9.531818	10.468182	10.023789	9.976211	■	50
11	45	9.509121	10.491879	9.531921	10.468079	10.023800	9.976200	15	49
12	48	9.509314	10.491786	9.532025	10.467975	10.023811	9.976189	12	48
13	15	9.509507	10.491693	9.532128	10.467872	10.023822	9.976178	45	47
14	■	9.509699	10.491600	9.532232	10.467768	10.023832	9.976168	30	46
15	45	9.509892	10.491508	9.532335	10.467665	10.023843	9.976157	15	45
16	49	9.509885	10.491415	9.532439	10.467561	10.023854	9.976146	11	44
17	■	9.509878	10.491322	9.532542	10.467458	10.023865	9.976135	■	43
18	30	9.509870	10.491230	9.532646	10.467354	10.023876	9.976124	30	42
19	45	9.509863	10.491137	9.532749	10.467251	10.023887	9.976114	15	41
20	50	9.509856	10.491044	9.532853	10.467147	10.023897	9.976103	10	40
21	15	9.509848	10.490952	9.532956	10.467044	10.023908	9.976092	45	39
22	30	9.509841	10.490859	9.533059	10.466941	10.023919	9.976081	30	38
23	45	9.509833	10.490767	9.533163	10.466837	10.023929	9.976071	15	37
24	51	9.509826	10.490674	9.533266	10.466734	10.023940	9.976060	9	36
25	15	9.509818	10.490582	9.533369	10.466631	10.023951	9.976049	45	35
26	30	9.509811	10.490489	9.533472	10.466528	10.023962	9.976038	30	34
27	45	9.509803	10.490397	9.533576	10.466424	10.023973	9.976027	15	33
28	52	9.509796	10.490304	9.533679	10.466321	10.023983	9.976017	8	32
29	15	9.509788	10.490212	9.533782	10.466218	10.023994	9.976006	45	31
30	30	9.509780	10.490120	9.533885	10.466115	10.024005	9.975996	30	30
31	45	9.509773	10.490027	9.533988	10.466012	10.024016	9.975984	■	29
32	53	9.510065	10.489935	9.534092	10.465908	10.024026	9.975974	7	28
33	15	9.510157	10.489843	9.534195	10.465805	10.024037	9.975963	45	27
34	30	9.510250	10.489750	9.534298	10.465702	10.024048	9.975952	30	26
35	45	9.510342	10.489658	9.534401	10.465599	10.024059	9.975941	■	25
36	54	9.510434	10.489566	9.534504	10.465496	10.024070	9.975930	6	24
37	15	9.510526	10.489474	9.534607	10.465393	10.024081	9.975919	■	23
38	30	9.510619	10.489381	9.534710	10.465290	10.024091	9.975909	30	22
39	45	9.510711	10.489289	■.534813	10.465187	10.024102	9.975898	15	21
40	55	9.510803	10.489197	9.534916	10.465084	10.024113	9.975887	5	20
41	15	9.510895	10.489105	9.535019	10.464981	10.024124	9.975876	45	19
42	30	9.510987	10.489013	9.535122	10.464878	10.024135	9.975865	30	■
43	45	9.511079	10.488921	9.535225	10.464775	10.024146	9.975855	15	17
44	56	9.511172	10.488828	9.535328	10.464672	10.024156	9.975844	4	16
45	15	9.511264	10.488736	9.535431	10.464569	10.024167	9.975833	45	15
46	30	9.511356	10.488644	9.535534	10.464466	10.024178	9.975822	30	14
47	45	9.511448	10.488552	9.535636	10.464364	10.024189	9.975811	15	13
48	57	9.511540	10.488460	9.535739	10.464261	10.024200	9.975800	3	12
49	15	9.511632	10.488368	9.535842	10.464158	10.024211	9.975789	45	11
50	30	9.511724	10.488276	9.535945	10.464055	10.024221	9.975779	30	10
51	45	9.511815	10.488186	9.536048	10.463952	10.024232	9.975768	15	9
52	58	9.511907	10.488093	9.536150	10.463850	10.024243	9.975757	2	8
53	15	9.511999	10.488001	9.536253	10.463747	10.024254	9.975746	45	7
54	30	9.512091	10.487909	9.536356	10.463644	10.024265	9.975735	30	■
55	45	9.512183	10.487817	9.536459	10.463541	10.024276	9.975724	15	5
56	59	9.512275	10.487725	9.536561	10.463439	10.024287	9.975713	1	■
57	15	9.512367	10.487633	9.536664	10.463336	10.024297	9.975703	45	3
58	■	9.512458	10.487542	■.536767	10.463233	10.024308	9.975692	30	2
59	45	9.512550	10.487450	9.536869	10.463131	10.024319	9.975681	15	1
60	60	9.512642	10.487358	9.536972	10.463028	10.024330	9.975670	0	0
sec.	"	sine.	coscant.	tangent.	cotangent.	secant.	cosec.	"	sec.
4° 44'.		LOG. SINES, &c.						71 deg.	

1° 10'.		LOG. SINES, &c. (L.)						19 deg.	
sec.	min.	sine.	coscant.	tangent.	cotangent.	secant.	cosec.	sec.	min.
0	0	9.512642	10.487358	9.536972	10.463028	10.024341	9.975659	60	60
1	15	9.512734	10.487266	9.537074	10.462926	10.024352	9.975648	45	50
2	30	9.512825	10.487175	9.537177	10.462823	10.024363	9.975637	30	58
3	45	9.512917	10.487083	9.537280	10.462720	10.024374	9.975626	15	57
4	1	9.513008	10.486991	9.537382	10.462618	10.024384	9.975616	59	56
5	15	9.513100	10.486900	9.537485	10.462515	10.024395	9.975605	45	55
6	30	9.513192	10.486808	9.537587	10.462413	10.024406	9.975594	30	54
7	45	9.513283	10.486717	9.537690	10.462310	10.024417	9.975583	15	53
8	2	9.513375	10.486625	9.537792	10.462208	10.024428	9.975572	58	52
9	15	9.513468	10.486534	9.537894	10.462106	10.024439	9.975561	45	51
10	30	9.513558	10.486442	9.537997	10.462003	10.024450	9.975550	30	50
11	45	9.513650	10.486350	9.538099	10.461901	10.024461	9.975539	15	49
12	3	9.513741	10.486259	9.538202	10.461798	10.024472	9.975528	57	48
13	15	9.513832	10.486168	9.538304	10.461696	10.024482	9.975518	45	47
14	30	9.513924	10.486076	9.538406	10.461594	10.024493	9.975507	30	46
15	45	9.514015	10.485985	9.538509	10.461491	10.024504	9.975496	15	45
16	4	9.514107	10.485893	9.538611	10.461389	10.024515	9.975485	56	44
17	15	9.514198	10.485801	9.538713	10.461287	10.024526	9.975474	45	43
18	30	9.514289	10.485711	9.538815	10.461185	10.024537	9.975463	30	42
19	45	9.514381	10.485619	9.538918	10.461082	10.024548	9.975452	15	41
20	5	9.514472	10.485528	9.539020	10.460980	10.024559	9.975441	55	40
21	15	9.514563	10.485437	9.539122	10.460878	10.024570	9.975430	45	39
22	30	9.514655	10.485345	9.539224	10.460776	10.024581	9.975419	30	38
23	45	9.514746	10.485254	9.539327	10.460673	10.024592	9.975408	15	37
24	6	9.514837	10.485163	9.539429	10.460571	10.024603	9.975397	54	36
25	15	9.514928	10.485072	9.539531	10.460469	10.024614	9.975386	45	35
26	30	9.515019	10.484981	9.539633	10.460367	10.024625	9.975375	30	34
27	45	9.515111	10.484889	9.539735	10.460265	10.024635	9.975365	15	33
28	7	9.515202	10.484798	9.539837	10.460163	10.024646	9.975354	53	32
29	15	9.515293	10.484707	9.539939	10.460061	10.024657	9.975343	45	31
30	30	9.515384	10.484616	9.540041	10.459959	10.024668	9.975332	30	30
31	45	9.515475	10.484525	9.540143	10.459857	10.024679	9.975321	15	29
32	8	9.515566	10.484434	9.540245	10.459755	10.024690	9.975310	52	28
33	15	9.515657	10.484343	9.540347	10.459653	10.024701	9.975299	45	27
34	30	9.515748	10.484252	9.540449	10.459551	10.024712	9.975288	30	26
35	45	9.515839	10.484161	9.540551	10.459449	10.024723	9.975277	15	25
36	9	9.515930	10.484070	9.540653	10.459347	10.024734	9.975266	51	24
37	15	9.516021	10.483979	9.540755	10.459245	10.024745	9.975255	45	23
38	30	9.516112	10.483888	9.540857	10.459143	10.024756	9.975244	30	22
39	45	9.516203	10.483797	9.540959	10.459041	10.024767	9.975233	15	21
40	10	9.516294	10.483706	9.541061	10.458939	10.024778	9.975222	50	20
41	15	9.516385	10.483615	9.541162	10.458838	10.024789	9.975211	45	19
42	30	9.516476	10.483525	9.541264	10.458736	10.024800	9.975200	30	18
43	45	9.516566	10.483434	9.541366	10.458634	10.024811	9.975189	15	17
44	11	9.516657	10.483343	9.541468	10.458532	10.024822	9.975178	49	16
45	15	9.516748	10.483252	9.541570	10.458430	10.024833	9.975167	45	15
46	30	9.516839	10.483162	9.541671	10.458329	10.024844	9.975156	30	14
47	45	9.516929	10.483071	9.541773	10.458227	10.024855	9.975145	15	13
48	12	9.517020	10.482980	9.541875	10.458125	10.024866	9.975134	48	12
49	15	9.517110	10.482890	9.541976	10.458024	10.024877	9.975123	45	11
50	30	9.517201	10.482799	9.542078	10.457922	10.024888	9.975112	30	10
51	45	9.517292	10.482708	9.542180	10.457820	10.024899	9.975101	15	9
52	13	9.517382	10.482618	9.542282	10.457719	10.024910	9.975090	47	8
53	15	9.517473	10.482527	9.542383	10.457617	10.024921	9.975079	45	7
54	30	9.517564	10.482436	9.542484	10.457516	10.024932	9.975068	30	6
55	45	9.517654	10.482346	9.542586	10.457414	10.024943	9.975057	15	5
56	14	9.517745	10.482255	9.542688	10.457312	10.024954	9.975046	46	4
57	15	9.517835	10.482165	9.542789	10.457211	10.024965	9.975035	45	3
58	30	9.517926	10.482074	9.542891	10.457109	10.024976	9.975024	30	2
59	45	9.518016	10.481984	9.542992	10.457008	10.024987	9.975013	15	1
60	15	9.518107	10.481893	9.543094	10.456906			45	0
sec.	min.	sine.	coscant.	tangent.	cotangent.	secant.	cosec.	sec.	min.

4° 43'.

LOG. SINES, &c.

70 deg.

1 ^h 17 ^m .		LOG. SINES, &c. (t.)						19 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	15	9.518107	10.481893	9.543004	10.456906	10.024987	9.975013	45	60
1	15	9.518197	10.481803	9.543195	10.456805	10.024998	9.975002	45	59
2	30	9.518287	10.481713	9.543297	10.456703	10.025009	9.974991	30	58
3	45	9.518378	10.481622	9.543398	10.456602	10.025020	9.974980	15	57
4	16	9.518468	10.481532	9.543499	10.456501	10.025031	9.974969	44	56
5	15	9.518559	10.481441	9.543601	10.456399	10.025042	9.974958	45	55
6	30	9.518649	10.481351	9.543702	10.456298	10.025053	9.974947	30	54
7	45	9.518739	10.481261	9.543803	10.456197	10.025064	9.974936	15	53
8	17	9.518829	10.481171	9.543905	10.456095	10.025075	9.974925	43	52
9	15	9.518920	10.481080	9.544006	10.455994	10.025086	9.974914	45	51
10	30	9.519010	10.480990	9.544107	10.455893	10.025098	9.974902	30	50
11	45	9.519100	10.480900	9.544209	10.455791	10.025109	9.974891	15	49
12	18	9.519190	10.480810	9.544310	10.455690	10.025120	9.974880	42	48
13	15	9.519281	10.480719	9.544411	10.455589	10.025131	9.974869	45	47
14	30	9.519371	10.480629	9.544512	10.455488	10.025142	9.974858	30	46
15	45	9.519461	10.480539	9.544614	10.455386	10.025153	9.974847	15	45
16	19	9.519551	10.480449	9.544715	10.455285	10.025164	9.974836	41	44
17	15	9.519641	10.480359	9.544816	10.455184	10.025175	9.974825	45	43
18	30	9.519731	10.480269	9.544917	10.455083	10.025186	9.974814	30	42
19	45	9.519821	10.480179	9.545018	10.454982	10.025197	9.974803	15	41
20	20	9.519911	10.480089	9.545119	10.454881	10.025208	9.974792	40	40
21	15	9.520001	10.479999	9.545220	10.454780	10.025219	9.974781	45	39
22	30	9.520091	10.479909	9.545321	10.454679	10.025230	9.974770	30	38
23	45	9.520181	10.479819	9.545423	10.454577	10.025241	9.974759	15	37
24	21	9.520271	10.479729	9.545524	10.454476	10.025253	9.974747	39	36
25	15	9.520361	10.479639	9.545625	10.454375	10.025264	9.974736	45	35
26	30	9.520451	10.479549	9.545726	10.454274	10.025275	9.974725	30	34
27	45	9.520541	10.479459	9.545827	10.454173	10.025286	9.974714	15	33
28	22	9.520631	10.479369	9.545928	10.454072	10.025297	9.974703	38	32
29	15	9.520720	10.479280	9.546028	10.453972	10.025308	9.974692	45	31
30	30	9.520810	10.479190	9.546129	10.453871	10.025319	9.974681	30	30
31	45	9.520900	10.479100	9.546230	10.453770	10.025330	9.974670	15	29
32	23	9.520990	10.479010	9.546331	10.453669	10.025341	9.974659	37	28
33	15	9.521080	10.478920	9.546432	10.453568	10.025352	9.974648	45	27
34	30	9.521169	10.478831	9.546533	10.453467	10.025364	9.974636	30	26
35	45	9.521259	10.478741	9.546634	10.453366	10.025375	9.974625	15	25
36	24	9.521349	10.478651	9.546735	10.453265	10.025386	9.974614	36	24
37	15	9.521438	10.478562	9.546835	10.453165	10.025397	9.974603	45	23
38	30	9.521528	10.478472	9.546936	10.453064	10.025408	9.974592	30	22
39	45	9.521618	10.478382	9.547037	10.452963	10.025419	9.974581	15	21
40	25	9.521707	10.478293	9.547138	10.452862	10.025430	9.974570	35	20
41	15	9.521797	10.478203	9.547238	10.452762	10.025441	9.974559	45	19
42	30	9.521886	10.478114	9.547339	10.452661	10.025453	9.974547	30	18
43	45	9.521976	10.478024	9.547440	10.452560	10.025464	9.974536	15	17
44	26	9.522066	10.477934	9.547540	10.452460	10.025475	9.974525	34	16
45	15	9.522155	10.477845	9.547641	10.452359	10.025486	9.974514	45	15
46	30	9.522245	10.477755	9.547742	10.452258	10.025497	9.974503	30	14
47	45	9.522334	10.477666	9.547842	10.452158	10.025508	9.974492	15	13
48	27	9.522423	10.477577	9.547943	10.452057	10.025519	9.974481	33	12
49	15	9.522513	10.477487	9.548043	10.451957	10.025531	9.974469	45	11
50	30	9.522602	10.477398	9.548144	10.451856	10.025542	9.974458	30	10
51	45	9.522692	10.477308	9.548245	10.451755	10.025553	9.974447	15	9
52	28	9.522781	10.477219	9.548345	10.451655	10.025564	9.974436	32	8
53	15	9.522870	10.477130	9.548446	10.451554	10.025575	9.974425	45	7
54	30	9.522960	10.477040	9.548546	10.451454	10.025586	9.974414	30	6
55	45	9.523049	10.476951	9.548647	10.451353	10.025598	9.974402	15	5
56	29	9.523138	10.476862	9.548747	10.451253	10.025609	9.974391	31	4
57	15	9.523228	10.476772	9.548847	10.451153	10.025620	9.974380	45	3
58	30	9.523317	10.476683	9.548948	10.451052	10.025631	9.974369	30	2
59	45	9.523406	10.476594	9.549048	10.450952	10.025642	9.974358	15	1
60	30	9.523495	10.476505	9.549149	10.450851	10.025653	9.974347	30	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
4 ^h 42 ^m .		LOG. SINES, &c.						70 deg.	

1 ^h 18 ^m .		LOG. SINES, &c. (t.)					19 deg.		
c.	"	sine.	cosecant	tangent.	cotangent.	secant.	cosine.	"	sec.
0	30	9.523495	10.476505	9.549149	10.450851	10.025653	9.974347	30	60
1	15	9.523584	10.476416	9.549249	10.450751	10.025665	9.974335	45	59
2	30	9.523674	10.476326	9.549349	10.450651	10.025676	9.974324	30	58
3	45	9.523763	10.476237	9.549450	10.450550	10.025687	9.974313	15	57
4	31	9.523852	10.476148	9.549550	10.450450	10.025698	9.974302	29	56
5	15	9.523941	10.476059	9.549650	10.450350	10.025709	9.974291	45	55
6	30	9.524030	10.475970	9.549751	10.450249	10.025721	9.974279	30	54
7	45	9.524119	10.475881	9.549851	10.450149	10.025732	9.974268	15	53
8	32	9.524208	10.475792	9.549951	10.450049	10.025743	9.974257	28	52
9	15	9.524297	10.475703	9.550051	10.449949	10.025754	9.974246	45	51
0	30	9.524386	10.475614	9.550151	10.449849	10.025765	9.974235	30	50
1	45	9.524475	10.475525	9.550252	10.449748	10.025777	9.974223	15	49
2	33	9.524564	10.475436	9.550352	10.449648	10.025788	9.974212	27	48
3	15	9.524653	10.475347	9.550452	10.449548	10.025799	9.974201	45	47
4	30	9.524742	10.475258	9.550552	10.449448	10.025810	9.974190	30	46
5	45	9.524831	10.475169	9.550652	10.449348	10.025822	9.974178	15	45
6	34	9.524920	10.475080	9.550752	10.449248	10.025833	9.974167	26	44
7	15	9.525008	10.474992	9.550852	10.449148	10.025844	9.974156	45	43
8	30	9.525097	10.474903	9.550952	10.449048	10.025855	9.974145	30	42
9	45	9.525186	10.474814	9.551052	10.448948	10.025866	9.974134	15	41
0	35	9.525275	10.474725	9.551152	10.448848	10.025878	9.974122	25	40
1	15	9.525364	10.474636	9.551252	10.448748	10.025889	9.974111	45	39
2	30	9.525452	10.474548	9.551352	10.448648	10.025900	9.974100	30	38
3	45	9.525541	10.474459	9.551452	10.448548	10.025911	9.974089	15	37
4	36	9.525630	10.474370	9.551552	10.448448	10.025923	9.974077	24	36
5	15	9.525718	10.474282	9.551652	10.448348	10.025934	9.974066	45	35
6	30	9.525807	10.474193	9.551752	10.448248	10.025945	9.974055	30	34
7	45	9.525896	10.474104	9.551852	10.448148	10.025956	9.974044	15	33
8	37	9.525984	10.474016	9.551952	10.448048	10.025968	9.974032	23	32
9	15	9.526073	10.473927	9.552052	10.447948	10.025979	9.974021	45	31
0	30	9.526162	10.473838	9.552152	10.447848	10.025990	9.974010	30	30
1	45	9.526250	10.473750	9.552252	10.447748	10.026001	9.973999	15	29
2	38	9.526339	10.473661	9.552351	10.447649	10.026013	9.973987	22	28
3	15	9.526427	10.473573	9.552451	10.447549	10.026024	9.973976	45	27
4	30	9.526516	10.473484	9.552551	10.447449	10.026035	9.973965	30	26
5	45	9.526604	10.473396	9.552651	10.447349	10.026047	9.973953	15	25
6	39	9.526693	10.473307	9.552750	10.447250	10.026058	9.973942	21	24
7	15	9.526781	10.473219	9.552850	10.447150	10.026069	9.973931	45	23
8	30	9.526870	10.473130	9.552950	10.447050	10.026080	9.973920	30	22
9	45	9.526958	10.473042	9.553050	10.446950	10.026092	9.973908	15	21
0	40	9.527046	10.472954	9.553149	10.446851	10.026103	9.973897	20	20
1	15	9.527135	10.472865	9.553249	10.446751	10.026114	9.973886	45	19
2	30	9.527223	10.472777	9.553348	10.446652	10.026126	9.973874	30	18
3	45	9.527311	10.472689	9.553448	10.446552	10.026137	9.973863	15	17
4	41	9.527400	10.472600	9.553548	10.446452	10.026148	9.973852	19	16
5	15	9.527488	10.472512	9.553647	10.446353	10.026159	9.973841	45	15
6	30	9.527576	10.472424	9.553747	10.446253	10.026171	9.973829	30	14
7	45	9.527664	10.472336	9.553846	10.446154	10.026182	9.973818	15	13
8	42	9.527753	10.472247	9.553946	10.446054	10.026193	9.973807	18	12
9	15	9.527841	10.472159	9.554045	10.445955	10.026205	9.973795	45	11
0	30	9.527929	10.472071	9.554145	10.445855	10.026216	9.973784	30	10
1	45	9.528017	10.471983	9.554244	10.445756	10.026227	9.973773	15	9
2	43	9.528105	10.471895	9.554344	10.445656	10.026239	9.973761	17	8
3	15	9.528193	10.471807	9.554443	10.445557	10.026250	9.973750	45	7
4	30	9.528281	10.471719	9.554543	10.445457	10.026261	9.973739	30	6
5	45	9.528370	10.471630	9.554642	10.445358	10.026273	9.973727	15	5
6	44	9.528458	10.471542	9.554741	10.445259	10.026284	9.973716	16	4
7	15	9.528546	10.471454	9.554841	10.445159	10.026295	9.973705	45	3
8	30	9.528634	10.471366	9.554940	10.445060	10.026307	9.973693	30	2
9	45	9.528722	10.471278	9.555039	10.444961	10.026318	9.973682	15	1
0	45	9.528810	10.471190	9.555139	10.444861	10.026329	9.973671	15	0
	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
4 ^h 41 ^m .		LOG. SINES, &c.					70 deg.		

1° 19'.		LOG. SINES, &c. (t.)						19 deg.	
min.	sec.	sine.	coscant.	tangent.	cotangent.	secant.	cosec.	min.	sec.
0	45	9.528810	10.471190	9.556139	10.444861	10.026329	9.973671	15	80
1	15	9.528898	10.471102	9.555238	10.444762	10.026341	9.973659	45	50
2	30	9.528986	10.471014	9.555337	10.444663	10.026352	9.973648	30	58
3	45	9.529073	10.470927	9.555437	10.444563	10.026363	9.973637	15	57
4	46	9.529161	10.470839	9.555536	10.444464	10.026375	9.973625	14	46
5	15	9.529249	10.470751	9.555635	10.444365	10.026386	9.973614	45	55
6	30	9.529337	10.470663	9.555734	10.444266	10.026397	9.973603	30	54
7	45	9.529425	10.470575	9.555833	10.444167	10.026409	9.973591	15	53
8	47	9.529513	10.470487	9.555933	10.444067	10.026420	9.973580	13	52
9	15	9.529601	10.470399	9.556032	10.443968	10.026431	9.973569	45	51
10	30	9.529688	10.470312	9.556131	10.443869	10.026443	9.973557	30	50
11	45	9.529776	10.470224	9.556230	10.443770	10.026454	9.973546	15	49
12	48	9.529864	10.470136	9.556329	10.443671	10.026465	9.973535	12	48
13	15	9.529951	10.470049	9.556428	10.443572	10.026477	9.973523	45	47
14	30	9.530039	10.469961	9.556527	10.443473	10.026488	9.973512	30	46
15	45	9.530127	10.469873	9.556626	10.443374	10.026500	9.973500	15	45
16	49	9.530215	10.469785	9.556725	10.443275	10.026511	9.973489	11	44
17	15	9.530302	10.469698	9.556824	10.443176	10.026522	9.973478	45	43
18	30	9.530390	10.469610	9.556923	10.443077	10.026534	9.973466	30	42
19	46	9.530477	10.469523	9.557022	10.442978	10.026545	9.973455	15	41
20	50	9.530565	10.469435	9.557121	10.442879	10.026557	9.973443	10	40
21	15	9.530652	10.469348	9.557220	10.442780	10.026568	9.973432	45	39
22	30	9.530740	10.469260	9.557319	10.442681	10.026579	9.973421	30	38
23	45	9.530828	10.469172	9.557418	10.442582	10.026591	9.973409	15	37
24	51	9.530915	10.469085	9.557517	10.442483	10.026602	9.973398	9	36
25	15	9.531002	10.468998	9.557616	10.442384	10.026613	9.973387	45	35
26	30	9.531090	10.468910	9.557715	10.442285	10.026625	9.973375	30	34
27	45	9.531177	10.468823	9.557814	10.442186	10.026636	9.973364	15	33
28	52	9.531265	10.468735	9.557912	10.442088	10.026648	9.973352	8	32
29	15	9.531352	10.468648	9.558011	10.441989	10.026659	9.973341	45	31
30	30	9.531440	10.468560	9.558110	10.441890	10.026671	9.973329	30	30
31	45	9.531527	10.468473	9.558209	10.441791	10.026682	9.973318	15	29
32	53	9.531614	10.468386	9.558308	10.441692	10.026693	9.973307	7	28
33	15	9.531702	10.468298	9.558406	10.441594	10.026705	9.973295	45	27
34	30	9.531789	10.468211	9.558505	10.441495	10.026716	9.973284	30	26
35	45	9.531876	10.468124	9.558604	10.441396	10.026728	9.973272	15	25
36	54	9.531963	10.468037	9.558703	10.441298	10.026739	9.973261	6	24
37	15	9.532051	10.467949	9.558801	10.441199	10.026751	9.973249	45	23
38	30	9.532138	10.467862	9.558900	10.441100	10.026762	9.973238	30	22
39	45	9.532225	10.467775	9.558998	10.441002	10.026773	9.973227	15	21
40	55	9.532312	10.467688	9.559097	10.440903	10.026785	9.973215	5	20
41	15	9.532399	10.467601	9.559196	10.440804	10.026796	9.973204	45	19
42	30	9.532487	10.467513	9.559294	10.440706	10.026808	9.973192	30	18
43	45	9.532574	10.467426	9.559393	10.440607	10.026819	9.973181	15	17
44	56	9.532661	10.467339	9.559491	10.440509	10.026831	9.973169	4	16
45	15	9.532748	10.467252	9.559590	10.440410	10.026842	9.973158	45	15
46	30	9.532835	10.467165	9.559688	10.440312	10.026854	9.973146	30	14
47	45	9.532922	10.467078	9.559787	10.440213	10.026865	9.973135	15	13
48	57	9.533009	10.466991	9.559885	10.440115	10.026876	9.973124	3	12
49	15	9.533096	10.466904	9.559984	10.440016	10.026888	9.973112	45	11
50	30	9.533183	10.466817	9.560082	10.439918	10.026899	9.973101	30	10
51	45	9.533270	10.466730	9.560181	10.439819	10.026911	9.973089	15	9
52	58	9.533357	10.466643	9.560279	10.439721	10.026922	9.973078	11	8
53	15	9.533444	10.466556	9.560378	10.439622	10.026934	9.973066	45	7
54	30	9.533531	10.466469	9.560476	10.439524	10.026945	9.973055	30	6
55	45	9.533618	10.466382	9.560574	10.439426	10.026957	9.973043	15	5
56	59	9.533704	10.466296	9.560673	10.439327	10.026968	9.973032	1	4
57	15	9.533791	10.466209	9.560771	10.439229	10.026980	9.973020	45	3
58	30	9.533878	10.466122	9.560869	10.439131	10.026991	9.973009	30	2
59	45	9.533965	10.466035	9.560968	10.439033	10.027003	9.972997	15	1
60	60	9.534052	10.465948	9.561066	10.438934	10.027014	9.972986	0	0
min.	sec.	sine.	coscant.	tangent.	cotangent.	secant.	cosec.	min.	sec.
4° 40'		LOG. SINES, &c.						70 deg.	

1° 20'		LOG. SINES, &c. (t.)						20 deg.	
deg.	'	sine.	coscant.	tangent.	cotangent.	secant.	cosec.	'	sec.
0	0	9.834052	10.465948	9.561066	10.438934	10.027014	9.972986	60	60
1	15	9.834138	10.465862	9.561164	10.438836	10.027026	9.972974	45	59
2	30	9.834225	10.465775	9.561262	10.438738	10.027037	9.972963	30	58
3	45	9.834312	10.465688	9.561361	10.438639	10.027049	9.972951	15	57
4	1	9.834399	10.465601	9.561459	10.438541	10.027060	9.972940	59	56
5	15	9.834485	10.465515	9.561557	10.438443	10.027072	9.972928	45	55
6	30	9.834572	10.465428	9.561655	10.438345	10.027083	9.972917	30	54
7	45	9.834659	10.465341	9.561753	10.438247	10.027095	9.972906	15	53
8	2	9.834745	10.465255	9.561851	10.438149	10.027106	9.972894	58	52
9	15	9.834832	10.465168	9.561950	10.438050	10.027118	9.972882	45	51
10	30	9.834918	10.465082	9.562048	10.437952	10.027129	9.972871	30	50
11	45	9.835005	10.464995	9.562146	10.437854	10.027141	9.972859	15	49
12	3	9.835091	10.464909	9.562244	10.437756	10.027152	9.972848	57	48
13	15	9.835178	10.464822	9.562342	10.437658	10.027164	9.972836	45	47
14	30	9.835265	10.464735	9.562440	10.437560	10.027175	9.972825	30	46
15	45	9.835351	10.464649	9.562538	10.437462	10.027187	9.972813	15	45
16	4	9.835437	10.464563	9.562636	10.437364	10.027198	9.972802	56	44
17	15	9.835524	10.464476	9.562734	10.437266	10.027210	9.972790	45	43
18	30	9.835610	10.464390	9.562832	10.437168	10.027222	9.972778	30	42
19	45	9.835697	10.464303	9.562930	10.437070	10.027233	9.972767	15	41
20	5	9.835783	10.464217	9.563028	10.436972	10.027245	9.972755	55	40
21	15	9.835870	10.464130	9.563126	10.436874	10.027256	9.972744	45	39
22	30	9.835956	10.464044	9.563224	10.436776	10.027268	9.972732	30	38
23	45	9.836042	10.463958	9.563321	10.436679	10.027279	9.972721	15	37
24	6	9.836129	10.463871	9.563419	10.436581	10.027291	9.972709	54	36
25	15	9.836215	10.463785	9.563517	10.436483	10.027302	9.972698	45	35
26	30	9.836301	10.463699	9.563615	10.436385	10.027314	9.972686	30	34
27	45	9.836387	10.463613	9.563713	10.436287	10.027326	9.972674	15	33
28	7	9.836474	10.463526	9.563811	10.436189	10.027337	9.972663	53	32
29	15	9.836560	10.463440	9.563908	10.436092	10.027349	9.972651	45	31
30	30	9.836646	10.463354	9.564006	10.435994	10.027360	9.972640	30	30
31	45	9.836732	10.463268	9.564104	10.435896	10.027372	9.972628	15	29
32	8	9.836818	10.463182	9.564202	10.435798	10.027383	9.972617	52	28
33	15	9.836904	10.463096	9.564299	10.435701	10.027395	9.972605	45	27
34	30	9.836991	10.463009	9.564397	10.435603	10.027407	9.972593	30	26
35	45	9.837077	10.462923	9.564495	10.435505	10.027418	9.972582	15	25
36	9	9.837163	10.462837	9.564592	10.435408	10.027430	9.972570	51	24
37	15	9.837249	10.462751	9.564690	10.435310	10.027441	9.972559	45	23
38	30	9.837335	10.462665	9.564788	10.435212	10.027453	9.972547	30	22
39	45	9.837421	10.462579	9.564885	10.435115	10.027465	9.972535	15	21
40	10	9.837507	10.462493	9.564983	10.435017	10.027476	9.972524	50	20
41	15	9.837593	10.462407	9.565081	10.434919	10.027488	9.972512	45	19
42	30	9.837679	10.462321	9.565178	10.434822	10.027499	9.972501	30	18
43	45	9.837765	10.462235	9.565276	10.434724	10.027511	9.972489	15	17
44	11	9.837851	10.462149	9.565373	10.434627	10.027523	9.972477	49	16
45	15	9.837937	10.462063	9.565471	10.434529	10.027534	9.972466	45	15
46	30	9.838023	10.461977	9.565568	10.434432	10.027546	9.972454	30	14
47	45	9.838108	10.461892	9.565666	10.434334	10.027557	9.972443	15	13
48	12	9.838194	10.461806	9.565763	10.434237	10.027569	9.972431	48	12
49	15	9.838280	10.461720	9.565861	10.434139	10.027581	9.972419	45	11
50	30	9.838366	10.461634	9.565958	10.434042	10.027592	9.972408	30	10
51	45	9.838452	10.461548	9.566056	10.433944	10.027604	9.972396	15	9
52	13	9.838537	10.461463	9.566153	10.433847	10.027616	9.972384	47	8
53	15	9.838623	10.461377	9.566250	10.433750	10.027627	9.972373	45	7
54	30	9.838709	10.461291	9.566348	10.433652	10.027639	9.972361	30	6
55	45	9.838795	10.461205	9.566445	10.433555	10.027650	9.972350	15	5
56	14	9.838880	10.461120	9.566542	10.433458	10.027662	9.972338	46	4
57	15	9.838966	10.461034	9.566640	10.433360	10.027674	9.972326	45	3
58	30	9.839052	10.460948	9.566737	10.433263	10.027685	9.972315	30	2
59	45	9.839137	10.460863	9.566834	10.433166	10.027697	9.972303	15	1
60	15	9.839223	10.460777	9.566932	10.433068	10.027709	9.972291	45	0
deg.	'	sine.	coscant.	tangent.	cotangent.	secant.	cosec.	'	sec.
4° 39'		LOG. SINES, &c.						69 deg.	

1° 21'		LOG. SINES, &c. (1.)						20 deg.	
sec.	min.	sine.	cosine.	tangent.	cotangent.	secant.	cosecant.	sec.	min.
0	15	9.530223	10.460777	9.568033	10.432068	10.027720	9.972280	45	66
1	16	9.530309	10.460691	9.567929	10.432171	10.027720	9.972280	45	66
2	30	9.530394	10.460606	9.567826	10.432274	10.027732	9.972268	30	58
3	45	9.530480	10.460520	9.567723	10.432377	10.027744	9.972256	15	57
4	16	9.530565	10.460435	9.567620	10.432480	10.027756	9.972245	44	56
5	18	9.530651	10.460349	9.567518	10.432582	10.027767	9.972233	45	55
6	30	9.530736	10.460264	9.567415	10.432685	10.027779	9.972221	30	54
7	45	9.530822	10.460178	9.567312	10.432788	10.027790	9.972210	15	53
8	17	9.530907	10.460093	9.567209	10.432891	10.027802	9.972198	43	52
9	18	9.530993	10.460007	9.567106	10.432994	10.027814	9.972186	45	51
10	19	9.540078	10.459922	9.567003	10.433097	10.027826	9.972175	30	50
11	20	9.540163	10.459837	9.566900	10.433200	10.027837	9.972163	15	49
12	18	9.540249	10.459751	9.566807	10.433303	10.027849	9.972151	42	48
13	18	9.540334	10.459666	9.566715	10.433406	10.027860	9.972140	45	47
14	30	9.540420	10.459580	9.566622	10.433508	10.027872	9.972128	30	46
15	45	9.540505	10.459495	9.566530	10.433611	10.027884	9.972116	15	45
16	19	9.540590	10.459410	9.566438	10.433714	10.027895	9.972105	41	44
17	18	9.540676	10.459324	9.566346	10.433817	10.027907	9.972093	30	43
18	30	9.540761	10.459239	9.566254	10.433920	10.027919	9.972081	15	42
19	45	9.540846	10.459154	9.566162	10.434023	10.027930	9.972070	40	41
20	20	9.540931	10.459069	9.566070	10.434127	10.027942	9.972058	39	40
21	18	9.541017	10.458983	9.565978	10.434230	10.027954	9.972046	45	39
22	30	9.541102	10.458898	9.565886	10.434333	10.027966	9.972034	30	38
23	45	9.541187	10.458813	9.565794	10.434436	10.027977	9.972023	15	37
24	21	9.541272	10.458728	9.565702	10.434539	10.027989	9.972011	39	36
25	18	9.541357	10.458643	9.565610	10.434642	10.028001	9.971999	45	35
26	30	9.541442	10.458558	9.565518	10.434745	10.028012	9.971988	30	34
27	45	9.541527	10.458473	9.565426	10.434848	10.028024	9.971976	15	33
28	22	9.541613	10.458387	9.565334	10.434951	10.028036	9.971964	38	32
29	18	9.541698	10.458302	9.565242	10.435054	10.028048	9.971952	45	31
30	30	9.541783	10.458217	9.565150	10.435157	10.028059	9.971941	30	30
31	45	9.541868	10.458132	9.565058	10.435260	10.028071	9.971929	15	29
32	23	9.541953	10.458047	9.564966	10.435363	10.028083	9.971917	37	28
33	18	9.542038	10.457962	9.564874	10.435466	10.028095	9.971905	45	27
34	30	9.542123	10.457877	9.564782	10.435569	10.028106	9.971894	30	26
35	45	9.542208	10.457792	9.564690	10.435672	10.028118	9.971882	15	25
36	24	9.542293	10.457707	9.564598	10.435775	10.028130	9.971870	36	24
37	18	9.542377	10.457622	9.564506	10.435878	10.028142	9.971858	45	23
38	30	9.542462	10.457537	9.564414	10.435981	10.028154	9.971847	30	22
39	45	9.542547	10.457452	9.564322	10.436084	10.028165	9.971835	15	21
40	25	9.542632	10.457367	9.564230	10.436187	10.028177	9.971823	35	20
41	18	9.542717	10.457282	9.564138	10.436290	10.028189	9.971811	45	19
42	30	9.542802	10.457197	9.564046	10.436393	10.028200	9.971800	30	18
43	45	9.542887	10.457113	9.563954	10.436496	10.028212	9.971788	15	17
44	26	9.542971	10.457028	9.563862	10.436599	10.028224	9.971776	34	16
45	18	9.543056	10.456944	9.563770	10.436702	10.028236	9.971764	45	15
46	30	9.543141	10.456859	9.563678	10.436805	10.028247	9.971753	30	14
47	45	9.543226	10.456774	9.563586	10.436908	10.028259	9.971741	15	13
48	27	9.543310	10.456690	9.563494	10.437011	10.028271	9.971729	33	12
49	18	9.543395	10.456605	9.563402	10.437114	10.028283	9.971717	45	11
50	30	9.543480	10.456520	9.563310	10.437217	10.028294	9.971706	30	10
51	45	9.543564	10.456436	9.563218	10.437320	10.028306	9.971694	15	9
52	28	9.543649	10.456351	9.563126	10.437423	10.028318	9.971682	32	8
53	18	9.543733	10.456267	9.563034	10.437526	10.028330	9.971670	45	7
54	30	9.543818	10.456182	9.562942	10.437629	10.028342	9.971658	30	6
55	45	9.543903	10.456097	9.562850	10.437732	10.028353	9.971647	15	5
56	29	9.543987	10.456013	9.562758	10.437835	10.028365	9.971635	31	4
57	18	9.544072	10.455928	9.562666	10.437938	10.028377	9.971623	45	3
58	30	9.544156	10.455844	9.562574	10.438041	10.028389	9.971611	30	2
59	45	9.544241	10.455759	9.562482	10.438144	10.028401	9.971599	15	1
60	30	9.544325	10.455675	9.562390	10.438247	10.028412	9.971588	30	0
sec.	min.	sine.	cosine.	tangent.	cotangent.	secant.	cosecant.	sec.	min.
4° 38'		LOG. SINES, &c.						69 deg.	

1° 32'.		LOG. SINES, &c. (t.)						20 deg.	
sec.	min.	sine.	coscant.	tangent	cotangent.	secant.	cosecant.	sec.	min.
0	30	9.544325	10.455675	9.572738	10.427262	10.028412	9.971588	30	60
1	15	9.544410	10.455590	9.572834	10.427166	10.028424	9.971576	45	59
2	30	9.544494	10.455506	9.572930	10.427070	10.028436	9.971564	30	58
3	45	9.544579	10.455421	9.573026	10.426974	10.028448	9.971552	15	57
4	31	9.544663	10.455337	9.573123	10.426877	10.028460	9.971540	29	56
5	15	9.544747	10.455253	9.573219	10.426781	10.028471	9.971529	45	55
6	30	9.544832	10.455168	9.573315	10.426685	10.028483	9.971517	30	54
7	45	9.544916	10.455084	9.573411	10.426589	10.028495	9.971506	15	53
8	32	9.545000	10.455000	9.573507	10.426493	10.028507	9.971493	28	52
9	15	9.545085	10.454915	9.573603	10.426397	10.028519	9.971481	45	51
10	30	9.545169	10.454831	9.573700	10.426300	10.028531	9.971469	30	50
11	45	9.545253	10.454747	9.573796	10.426204	10.028542	9.971458	15	49
12	33	9.545338	10.454662	9.573892	10.426108	10.028554	9.971446	27	48
13	15	9.545422	10.454578	9.573988	10.426012	10.028566	9.971434	45	47
14	30	9.545506	10.454494	9.574084	10.425916	10.028578	9.971422	30	46
15	45	9.545590	10.454410	9.574180	10.425820	10.028590	9.971410	15	45
16	34	9.545674	10.454326	9.574276	10.425724	10.028602	9.971398	26	44
17	15	9.545759	10.454241	9.574372	10.425628	10.028614	9.971386	45	43
18	30	9.545843	10.454157	9.574468	10.425532	10.028625	9.971375	30	42
19	45	9.545927	10.454073	9.574564	10.425436	10.028637	9.971363	15	41
20	35	9.546011	10.453989	9.574660	10.425340	10.028649	9.971351	25	40
21	15	9.546095	10.453905	9.574756	10.425244	10.028661	9.971339	45	39
22	30	9.546179	10.453821	9.574852	10.425148	10.028673	9.971327	30	38
23	45	9.546263	10.453737	9.574948	10.425052	10.028685	9.971315	15	37
24	36	9.546347	10.453653	9.575044	10.424956	10.028697	9.971303	24	36
25	15	9.546431	10.453569	9.575140	10.424860	10.028709	9.971292	45	35
26	30	9.546515	10.453485	9.575236	10.424765	10.028720	9.971280	30	34
27	45	9.546599	10.453401	9.575331	10.424669	10.028732	9.971268	15	33
28	37	9.546683	10.453317	9.575427	10.424573	10.028744	9.971256	23	32
29	15	9.546767	10.453233	9.575523	10.424477	10.028756	9.971244	45	31
30	30	9.546851	10.453149	9.575619	10.424381	10.028768	9.971232	30	30
31	45	9.546935	10.453065	9.575715	10.424285	10.028780	9.971220	15	29
32	38	9.547019	10.452981	9.575810	10.424190	10.028792	9.971208	22	28
33	15	9.547103	10.452897	9.575906	10.424094	10.028804	9.971196	45	27
34	30	9.547187	10.452813	9.576002	10.423998	10.028815	9.971185	30	26
35	45	9.547270	10.452730	9.576098	10.423902	10.028827	9.971173	15	25
36	39	9.547354	10.452646	9.576193	10.423807	10.028839	9.971161	21	24
37	15	9.547438	10.452562	9.576289	10.423711	10.028851	9.971149	45	23
38	30	9.547522	10.452478	9.576385	10.423615	10.028863	9.971137	30	22
39	45	9.547606	10.452394	9.576480	10.423520	10.028875	9.971125	15	21
40	40	9.547689	10.452311	9.576576	10.423424	10.028887	9.971113	20	20
41	15	9.547773	10.452227	9.576672	10.423328	10.028899	9.971101	45	19
42	30	9.547857	10.452143	9.576767	10.423233	10.028911	9.971089	30	18
43	45	9.547940	10.452060	9.576863	10.423137	10.028923	9.971077	15	17
44	41	9.548024	10.451976	9.576958	10.423042	10.028935	9.971065	19	16
45	15	9.548108	10.451892	9.577054	10.422946	10.028946	9.971054	45	15
46	30	9.548191	10.451809	9.577150	10.422850	10.028958	9.971042	30	14
47	45	9.548275	10.451725	9.577245	10.422755	10.028970	9.971030	15	13
48	42	9.548358	10.451642	9.577341	10.422659	10.028982	9.971018	18	12
49	15	9.548442	10.451558	9.577436	10.422564	10.028994	9.971006	45	11
50	30	9.548526	10.451474	9.577532	10.422468	10.029006	9.970994	30	10
51	45	9.548609	10.451391	9.577627	10.422373	10.029018	9.970982	15	9
52	43	9.548693	10.451307	9.577723	10.422277	10.029030	9.970970	17	8
53	15	9.548776	10.451224	9.577818	10.422182	10.029042	9.970958	45	7
54	30	9.548860	10.451140	9.577913	10.422087	10.029054	9.970946	30	6
55	45	9.548943	10.451057	9.578009	10.421991	10.029066	9.970934	15	5
56	44	9.549027	10.450973	9.578104	10.421896	10.029078	9.970922	16	4
57	15	9.549110	10.450890	9.578200	10.421800	10.029090	9.970910	45	3
58	30	9.549193	10.450807	9.578295	10.421705	10.029102	9.970898	30	2
59	45	9.549277	10.450723	9.578390	10.421610	10.029114	9.970886	15	1
60	45	9.549360	10.450640	9.578486	10.421514	10.029126	9.970874	15	0
sec.	min.	sine.	coscant.	tangent	cotangent.	secant.	cosecant.	sec.	min.
4° 37'.		LOG. SINES, &c.						69 deg.	

1° 23'		LOG. SINES, &c. (1.)						20 deg.	
sec.	sin.	coscant.	tangent.	cotangent.	secant.	covsine.	sec.	sin.	
0	45	9.548360	10.450640	9.578488	10.421514	10.029126	9.970874	15	60
1	15	9.549443	10.450557	9.578581	10.421419	10.029138	9.970862	45	59
2	30	9.549527	10.450473	9.578676	10.421324	10.029150	9.970850	30	58
3	45	9.549610	10.450390	9.578772	10.421228	10.029162	9.970838	15	57
4	46	9.549693	10.450307	9.578867	10.421133	10.029174	9.970826	14	56
5	15	9.549777	10.450223	9.578962	10.421038	10.029186	9.970814	45	55
6	30	9.549860	10.450140	9.579057	10.420943	10.029197	9.970803	30	54
7	45	9.549943	10.450057	9.579153	10.420847	10.029209	9.970791	15	53
8	47	9.550026	10.449974	9.579248	10.420752	10.029221	9.970779	13	52
9	15	9.550110	10.449890	9.579343	10.420657	10.029233	9.970767	45	51
10	30	9.550193	10.449807	9.579438	10.420562	10.029245	9.970755	30	50
11	45	9.550276	10.449724	9.579533	10.420467	10.029257	9.970743	15	49
12	48	9.550359	10.449641	9.579629	10.420371	10.029269	9.970731	12	48
13	15	9.550442	10.449558	9.579724	10.420276	10.029281	9.970719	45	47
14	30	9.550526	10.449475	9.579819	10.420181	10.029293	9.970707	30	46
15	45	9.550609	10.449392	9.579914	10.420086	10.029305	9.970695	15	45
16	49	9.550692	10.449308	9.580009	10.419991	10.029317	9.970683	11	44
17	15	9.550776	10.449225	9.580104	10.419896	10.029329	9.970671	45	43
18	30	9.550859	10.449142	9.580199	10.419801	10.029341	9.970659	30	42
19	45	9.550943	10.449059	9.580294	10.419706	10.029353	9.970647	15	41
20	50	9.551026	10.448976	9.580389	10.419611	10.029365	9.970635	10	40
21	15	9.551107	10.448893	9.580484	10.419516	10.029377	9.970623	45	39
22	30	9.551190	10.448810	9.580579	10.419421	10.029390	9.970610	30	38
23	45	9.551273	10.448727	9.580674	10.419326	10.029402	9.970598	15	37
24	51	9.551356	10.448644	9.580769	10.419231	10.029414	9.970586	9	36
25	15	9.551438	10.448562	9.580864	10.419136	10.029426	9.970574	45	35
26	30	9.551521	10.448479	9.580959	10.419041	10.029438	9.970562	30	34
27	45	9.551604	10.448396	9.581054	10.418946	10.029450	9.970550	15	33
28	52	9.551687	10.448313	9.581149	10.418851	10.029462	9.970538	8	32
29	15	9.551770	10.448230	9.581244	10.418756	10.029474	9.970526	45	31
30	30	9.551853	10.448147	9.581338	10.418662	10.029486	9.970514	30	30
31	45	9.551936	10.448064	9.581433	10.418567	10.029498	9.970502	15	29
32	53	9.552018	10.447982	9.581528	10.418472	10.029510	9.970490	7	28
33	15	9.552101	10.447899	9.581623	10.418377	10.029522	9.970478	45	27
34	30	9.552184	10.447816	9.581718	10.418282	10.029534	9.970466	30	26
35	45	9.552267	10.447733	9.581813	10.418187	10.029546	9.970454	15	25
36	54	9.552349	10.447651	9.581907	10.418093	10.029558	9.970442	6	24
37	15	9.552432	10.447568	9.582002	10.417998	10.029570	9.970430	45	23
38	30	9.552515	10.447485	9.582097	10.417903	10.029582	9.970418	30	22
39	45	9.552597	10.447403	9.582192	10.417808	10.029594	9.970406	15	21
40	55	9.552680	10.447320	9.582286	10.417714	10.029606	9.970394	5	20
41	15	9.552763	10.447237	9.582381	10.417619	10.029618	9.970382	45	19
42	30	9.552846	10.447155	9.582476	10.417524	10.029630	9.970370	30	18
43	45	9.552928	10.447072	9.582570	10.417430	10.029643	9.970357	15	17
44	56	9.553010	10.446990	9.582665	10.417335	10.029655	9.970345	4	16
45	15	9.553093	10.446907	9.582760	10.417240	10.029667	9.970333	45	15
46	30	9.553175	10.446825	9.582854	10.417146	10.029679	9.970321	30	14
47	45	9.553258	10.446742	9.582949	10.417051	10.029691	9.970309	15	13
48	57	9.553341	10.446659	9.583043	10.416957	10.029703	9.970297	3	12
49	15	9.553423	10.446577	9.583138	10.416862	10.029715	9.970285	45	11
50	30	9.553505	10.446495	9.583233	10.416767	10.029727	9.970273	30	10
51	45	9.553588	10.446412	9.583327	10.416673	10.029739	9.970261	15	9
52	58	9.553670	10.446330	9.583422	10.416578	10.029751	9.970249	2	8
53	15	9.553753	10.446247	9.583516	10.416484	10.029763	9.970237	45	7
54	30	9.553835	10.446165	9.583611	10.416389	10.029775	9.970224	30	6
55	45	9.553918	10.446082	9.583705	10.416295	10.029788	9.970212	15	5
56	59	9.554000	10.446000	9.583800	10.416200	10.029800	9.970200	1	4
57	15	9.554082	10.445918	9.583894	10.416106	10.029812	9.970188	45	3
58	30	9.554165	10.445835	9.583989	10.416011	10.029824	9.970176	30	2
59	45	9.554247	10.445753	9.584083	10.415917	10.029836	9.970164	15	1
60	60	9.554329	10.445671	9.584177	10.415823	10.029848	9.970152	0	0
sec.	sin.	coscant.	tangent.	cotangent.	secant.	covsine.	sec.	sin.	
4° 36'		LOG. SINES, &c.						69 deg.	

1 ^h 24 ^m .		LOG. SINES, &c. (t.)					21 deg.		
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.		sec.
0	0	9.554329	10.445671	9.584177	10.415823	10.029848	9.970152	60	60
1	15	9.554411	10.445589	9.584272	10.415728	10.029860	9.970140	45	59
2	30	9.554494	10.445506	9.584366	10.415634	10.029873	9.970127	30	58
3	45	9.554576	10.445424	9.584461	10.415539	10.029885	9.970115	15	57
4	1	9.554658	10.445342	9.584555	10.415445	10.029897	9.970103	59	56
5	15	9.554740	10.445260	9.584649	10.415351	10.029909	9.970091	45	55
6	30	9.554822	10.445178	9.584743	10.415257	10.029921	9.970079	30	54
7	45	9.554905	10.445095	9.584838	10.415162	10.029933	9.970067	15	53
8	2	9.554987	10.445013	9.584932	10.415068	10.029945	9.970055	58	52
9	15	9.555069	10.444931	9.585026	10.414974	10.029958	9.970042	45	51
10	30	9.555151	10.444849	9.585121	10.414879	10.029970	9.970030	30	50
11	45	9.555233	10.444767	9.585215	10.414785	10.029982	9.970018	15	49
12	3	9.555315	10.444685	9.585309	10.414691	10.029994	9.970006	57	48
13	15	9.555397	10.444603	9.585403	10.414597	10.030006	9.969994	45	47
14	30	9.555479	10.444521	9.585497	10.414503	10.030018	9.969982	30	46
15	45	9.555561	10.444439	9.585592	10.414408	10.030030	9.969970	15	45
16	4	9.555643	10.444357	9.585686	10.414314	10.030043	9.969957	56	44
17	15	9.555725	10.444275	9.585780	10.414220	10.030055	9.969945	45	43
18	30	9.555807	10.444193	9.585874	10.414126	10.030067	9.969933	30	42
19	45	9.555889	10.444111	9.585968	10.414032	10.030079	9.969921	15	41
20	5	9.555971	10.444029	9.586062	10.413938	10.030091	9.969909	55	40
21	15	9.556053	10.443947	9.586156	10.413844	10.030103	9.969897	45	39
22	30	9.556135	10.443865	9.586250	10.413750	10.030116	9.969884	30	38
23	45	9.556217	10.443783	9.586345	10.413655	10.030128	9.969872	15	37
24	6	9.556299	10.443701	9.586439	10.413561	10.030140	9.969860	54	36
25	15	9.556380	10.443620	9.586533	10.413467	10.030152	9.969848	45	35
26	30	9.556462	10.443538	9.586627	10.413373	10.030164	9.969836	30	34
27	45	9.556544	10.443456	9.586721	10.413279	10.030177	9.969823	15	33
28	7	9.556626	10.443374	9.586815	10.413185	10.030189	9.969811	53	32
29	15	9.556708	10.443292	9.586909	10.413091	10.030201	9.969799	45	31
30	30	9.556789	10.443211	9.587003	10.412997	10.030213	9.969787	30	30
31	45	9.556871	10.443129	9.587096	10.412904	10.030225	9.969775	15	29
32	8	9.556953	10.443047	9.587190	10.412810	10.030238	9.969762	52	28
33	15	9.557035	10.442965	9.587284	10.412716	10.030250	9.969750	45	27
34	30	9.557116	10.442884	9.587378	10.412622	10.030262	9.969738	30	26
35	45	9.557198	10.442802	9.587472	10.412528	10.030274	9.969726	15	25
36	9	9.557280	10.442720	9.587566	10.412434	10.030286	9.969714	51	24
37	15	9.557361	10.442639	9.587660	10.412340	10.030299	9.969701	45	23
38	30	9.557443	10.442557	9.587754	10.412246	10.030311	9.969689	30	22
39	45	9.557524	10.442476	9.587847	10.412153	10.030323	9.969677	15	21
40	10	9.557606	10.442394	9.587941	10.412059	10.030335	9.969665	50	20
41	15	9.557687	10.442313	9.588035	10.411965	10.030348	9.969652	45	19
42	30	9.557769	10.442231	9.588129	10.411871	10.030360	9.969640	30	18
43	45	9.557851	10.442149	9.588223	10.411777	10.030372	9.969628	15	17
44	11	9.557932	10.442068	9.588316	10.411684	10.030384	9.969616	49	16
45	15	9.558014	10.441986	9.588410	10.411590	10.030397	9.969603	45	15
46	30	9.558095	10.441905	9.588504	10.411496	10.030409	9.969591	30	14
47	45	9.558176	10.441824	9.588597	10.411403	10.030421	9.969579	15	13
48	12	9.558258	10.441742	9.588691	10.411309	10.030433	9.969567	48	12
49	15	9.558339	10.441661	9.588785	10.411215	10.030446	9.969554	45	11
50	30	9.558421	10.441579	9.588878	10.411122	10.030458	9.969542	30	10
51	45	9.558502	10.441498	9.588972	10.411028	10.030470	9.969530	15	9
52	13	9.558583	10.441417	9.589066	10.410934	10.030482	9.969518	47	8
53	15	9.558665	10.441335	9.589159	10.410841	10.030495	9.969505	45	7
54	30	9.558746	10.441254	9.589253	10.410747	10.030507	9.969493	30	6
55	45	9.558827	10.441173	9.589346	10.410654	10.030519	9.969481	15	5
56	14	9.558909	10.441091	9.589440	10.410560	10.030531	9.969469	46	4
57	15	9.558990	10.441010	9.589534	10.410466	10.030544	9.969456	45	3
58	30	9.559071	10.440929	9.589627	10.410373	10.030556	9.969444	30	2
59	45	9.559152	10.440848	9.589721	10.410279	10.030568	9.969432	15	1
60	15	9.559234	10.440766	9.589814	10.410186	10.030580	9.969420	45	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
4 ^h 35 ^m .		LOG. SINES, &c.					68 deg.		

1° 25'		LOG. SINES, &c. (L)						21 deg.	
deg.	'	sine	coscant	tangent	cotangent	secant	cosec	'	sec.
0	15	9.559234	10.440766	9.589814	10.410186	10.030593	9.969407	45	60
1	15	9.559315	10.440685	9.589908	10.410092	10.030605	9.969395	45	59
2	30	9.559396	10.440604	9.590001	10.409999	10.030617	9.969383	30	58
3	45	9.559477	10.440523	9.590095	10.409905	10.030630	9.969370	15	57
4	16	9.559558	10.440442	9.590188	10.409812	10.030642	9.969358	44	56
5	16	9.559640	10.440360	9.590281	10.409719	10.030654	9.969346	44	55
6	30	9.559721	10.440279	9.590375	10.409625	10.030667	9.969333	30	54
7	11	9.559802	10.440198	9.590468	10.409532	10.030679	9.969321	15	53
8	17	9.559883	10.440117	9.590562	10.409438	10.030691	9.969309	43	52
9	15	9.559964	10.440036	9.590655	10.409345	10.030703	9.969297	45	51
10	30	9.560045	10.439955	9.590748	10.409252	10.030716	9.969287	30	50
11	45	9.560126	10.439874	9.590842	10.409158	10.030728	9.969272	15	49
12	18	9.560207	10.439793	9.590935	10.409065	10.030740	9.969260	42	48
13	15	9.560288	10.439712	9.591028	10.408972	10.030753	9.969247	45	47
14	30	9.560369	10.439631	9.591122	10.408878	10.030765	9.969235	30	46
15	45	9.560450	10.439550	9.591215	10.408785	10.030777	9.969223	15	45
16	19	9.560531	10.439469	9.591308	10.408692	10.030790	9.969210	41	44
17	15	9.560612	10.439388	9.591401	10.408599	10.030802	9.969198	45	43
18	30	9.560693	10.439307	9.591495	10.408505	10.030814	9.969186	30	42
19	45	9.560774	10.439226	9.591588	10.408412	10.030827	9.969173	15	41
20	20	9.560855	10.439145	9.591681	10.408319	10.030839	9.969161	40	40
21	15	9.560935	10.439065	9.591774	10.408226	10.030851	9.969149	45	39
22	30	9.561016	10.438984	9.591867	10.408133	10.030863	9.969136	30	38
23	45	9.561097	10.438903	9.591961	10.408039	10.030876	9.969124	15	37
24	21	9.561178	10.438822	9.592054	10.407946	10.030888	9.969112	39	36
25	11	9.561259	10.438741	9.592147	10.407853	10.030900	9.969099	45	35
26	30	9.561339	10.438661	9.592240	10.407760	10.030913	9.969087	30	34
27	45	9.561420	10.438580	9.592333	10.407667	10.030925	9.969075	15	33
28	22	9.561501	10.438499	9.592426	10.407574	10.030938	9.969063	36	32
29	11	9.561582	10.438418	9.592519	10.407481	10.030950	9.969050	45	31
30	30	9.561662	10.438338	9.592612	10.407388	10.030962	9.969038	30	30
31	45	9.561743	10.438257	9.592705	10.407295	10.030975	9.969025	15	29
32	23	9.561824	10.438176	9.592798	10.407202	10.030987	9.969013	37	28
33	15	9.561904	10.438096	9.592891	10.407109	10.031000	9.969000	45	27
34	30	9.561985	10.438015	9.592985	10.407015	10.031013	9.968988	30	26
35	45	9.562066	10.437934	9.593077	10.406923	10.031024	9.968976	15	25
36	24	9.562146	10.437854	9.593170	10.406830	10.031037	9.968963	36	24
37	15	9.562227	10.437773	9.593263	10.406737	10.031049	9.968951	45	23
38	30	9.562307	10.437693	9.593356	10.406644	10.031061	9.968939	30	22
39	45	9.562388	10.437612	9.593449	10.406551	10.031074	9.968926	15	21
40	25	9.562468	10.437532	9.593542	10.406458	10.031086	9.968914	35	20
41	15	9.562549	10.437451	9.593635	10.406365	10.031099	9.968901	45	19
42	30	9.562629	10.437371	9.593728	10.406272	10.031111	9.968889	30	18
43	45	9.562710	10.437290	9.593821	10.406179	10.031123	9.968877	15	17
44	26	9.562790	10.437210	9.593914	10.406086	10.031136	9.968864	34	16
45	15	9.562871	10.437129	9.594007	10.405993	10.031148	9.968852	45	15
46	30	9.562951	10.437049	9.594099	10.405901	10.031161	9.968839	30	14
47	45	9.563032	10.436968	9.594192	10.405808	10.031173	9.968827	15	13
48	27	9.563112	10.436888	9.594285	10.405715	10.031186	9.968815	33	12
49	15	9.563192	10.436808	9.594378	10.405622	10.031198	9.968802	45	11
50	30	9.563273	10.436727	9.594471	10.405529	10.031210	9.968790	30	10
51	45	9.563353	10.436647	9.594563	10.405437	10.031223	9.968777	15	9
52	28	9.563433	10.436567	9.594656	10.405344	10.031236	9.968766	32	8
53	15	9.563514	10.436486	9.594749	10.405251	10.031248	9.968754	45	7
54	30	9.563594	10.436406	9.594842	10.405158	10.031260	9.968740	30	6
55	45	9.563674	10.436326	9.594934	10.405066	10.031272	9.968728	15	5
56	29	9.563755	10.436245	9.595027	10.404973	10.031285	9.968715	31	4
57	15	9.563835	10.436165	9.595120	10.404880	10.031297	9.968703	45	3
58	30	9.563915	10.436085	9.595213	10.404788	10.031310	9.968690	30	2
59	45	9.563995	10.436005	9.595305	10.404695	10.031322	9.968678	15	1
60	30	9.564075	10.435925	9.595397	10.404603	10.031334	9.968666	30	0
deg.	'	sine	coscant	tangent	cotangent	secant	cosec	'	sec.
4° 34'		LOG. SINES, &c.						68 deg.	

1° 26'		LOG. SINES, &c. (1.)						21 deg.	
sec.	'	sine.	coscant.	tangent.	cotangent.	secant.	cosec.	'	sec.
0	30	9.564973	10.435025	9.565397	10.404603	10.031322	9.968678	30	60
1	15	9.564156	10.435844	9.565490	10.404510	10.031335	9.968665	45	59
2	30	9.563339	10.436661	9.565583	10.404417	10.031347	9.968653	30	58
3	45	9.562522	10.437478	9.565675	10.404325	10.031359	9.968641	15	57
4	31	9.561705	10.438295	9.565768	10.404233	10.031372	9.968628	29	56
5	15	9.560888	10.439112	9.565860	10.404140	10.031384	9.968616	45	55
6	30	9.560071	10.439929	9.565953	10.404047	10.031397	9.968603	30	54
7	45	9.559254	10.440746	9.566045	10.403955	10.031409	9.968591	15	53
8	32	9.558437	10.441563	9.566138	10.403862	10.031422	9.968578	28	52
9	15	9.557620	10.442380	9.566230	10.403770	10.031434	9.968566	45	51
10	30	9.556803	10.443197	9.566323	10.403677	10.031447	9.968553	30	50
11	45	9.555986	10.444014	9.566415	10.403585	10.031459	9.968541	15	49
12	33	9.555169	10.444831	9.566508	10.403492	10.031472	9.968528	27	48
13	15	9.554352	10.445648	9.566600	10.403400	10.031484	9.968516	45	47
14	30	9.553535	10.446465	9.566693	10.403307	10.031497	9.968503	30	46
15	45	9.552718	10.447282	9.566785	10.403215	10.031509	9.968491	15	45
16	34	9.551901	10.448099	9.566878	10.403122	10.031522	9.968478	26	44
17	15	9.551084	10.448916	9.566970	10.403030	10.031534	9.968466	45	43
18	30	9.550267	10.449733	9.567062	10.402938	10.031547	9.968453	30	42
19	45	9.549450	10.450550	9.567155	10.402845	10.031559	9.968441	15	41
20	35	9.548633	10.451367	9.567247	10.402753	10.031571	9.968428	25	40
21	15	9.547816	10.452184	9.567339	10.402661	10.031584	9.968416	45	39
22	30	9.546999	10.453001	9.567432	10.402568	10.031596	9.968404	30	38
23	45	9.546182	10.453818	9.567524	10.402476	10.031609	9.968391	15	37
24	36	9.545365	10.454635	9.567616	10.402384	10.031621	9.968379	24	36
25	15	9.544548	10.455452	9.567708	10.402292	10.031634	9.968366	45	35
26	30	9.543731	10.456269	9.567801	10.402200	10.031647	9.968353	30	34
27	45	9.542914	10.457086	9.567893	10.402107	10.031659	9.968341	15	33
28	37	9.542097	10.457903	9.567985	10.402015	10.031672	9.968328	23	32
29	15	9.541280	10.458720	9.568077	10.401923	10.031684	9.968316	45	31
30	30	9.540463	10.459537	9.568170	10.401830	10.031697	9.968303	30	30
31	45	9.539646	10.460354	9.568262	10.401738	10.031709	9.968291	15	29
32	38	9.538829	10.461171	9.568354	10.401646	10.031722	9.968278	22	28
33	15	9.538012	10.461988	9.568446	10.401554	10.031734	9.968266	45	27
34	30	9.537195	10.462805	9.568538	10.401462	10.031747	9.968253	30	26
35	45	9.536378	10.463622	9.568630	10.401370	10.031759	9.968241	15	25
36	39	9.535561	10.464439	9.568722	10.401278	10.031772	9.968228	21	24
37	15	9.534744	10.465256	9.568814	10.401185	10.031784	9.968216	45	23
38	30	9.533927	10.466073	9.568907	10.401093	10.031797	9.968203	30	22
39	45	9.533110	10.466890	9.568999	10.401001	10.031809	9.968191	15	21
40	40	9.532293	10.467707	9.569091	10.400909	10.031822	9.968178	20	20
41	15	9.531476	10.468524	9.569183	10.400817	10.031834	9.968166	45	19
42	30	9.530659	10.469341	9.569275	10.400725	10.031847	9.968153	30	18
43	45	9.529842	10.470158	9.569367	10.400633	10.031860	9.968140	15	17
44	41	9.529025	10.470975	9.569459	10.400541	10.031872	9.968128	19	16
45	15	9.528208	10.471792	9.569551	10.400449	10.031885	9.968115	45	15
46	30	9.527391	10.472609	9.569643	10.400357	10.031897	9.968103	30	14
47	45	9.526574	10.473426	9.569735	10.400265	10.031910	9.968090	15	13
48	42	9.525757	10.474243	9.569827	10.400173	10.031922	9.968078	18	12
49	15	9.524940	10.475060	9.569919	10.400081	10.031935	9.968065	45	11
50	30	9.524123	10.475877	9.570011	10.399989	10.031947	9.968053	30	10
51	45	9.523306	10.476694	9.570103	10.399897	10.031960	9.968040	15	9
52	43	9.522489	10.477511	9.570195	10.399805	10.031973	9.968027	17	8
53	15	9.521672	10.478328	9.570287	10.399713	10.031985	9.968015	45	7
54	30	9.520855	10.479145	9.570379	10.399621	10.031998	9.968002	30	6
55	45	9.520038	10.479962	9.570471	10.399529	10.032010	9.967990	15	5
56	44	9.519221	10.480779	9.570563	10.399437	10.032023	9.967977	16	4
57	15	9.518404	10.481596	9.570655	10.399345	10.032036	9.967964	45	3
58	30	9.517587	10.482413	9.570747	10.399253	10.032048	9.967952	30	2
59	45	9.516770	10.483230	9.570839	10.399161	10.032061	9.967939	15	1
60	45	9.515953	10.484047	9.570931	10.399069	10.032073	9.967927	15	0
sec.	'	sine.	coscant.	tangent.	cotangent.	secant.	cosec.	'	sec.
4° 23'		LOG. SINES, &c.						68 deg.	

1° 27'.		LOG. SINES, &c. (t.)						21 deg.	
sec.	side.	coscant.	tangent.	cotangent.	secant.	cosine.	sec.	side.	
0	45	9.568855	10.431145	9.600929	10.399071	10.032073	9.967927	15	60
1	15	9.568935	10.431065	9.601021	10.398979	10.032066	9.967914	45	59
2	30	9.569014	10.430986	9.601112	10.398888	10.032059	9.967901	15	58
3	45	9.569093	10.430907	9.601204	10.398796	10.032111	9.967889	15	57
4	46	9.569172	10.430828	9.601296	10.398704	10.032124	9.967876	14	56
5	15	9.569251	10.430749	9.601387	10.398613	10.032136	9.967864	45	55
6	30	9.569330	10.430670	9.601479	10.398521	10.032149	9.967851	30	54
7	45	9.569409	10.430591	9.601571	10.398429	10.032162	9.967838	15	53
8	47	9.569488	10.430512	9.601662	10.398338	10.032174	9.967826	13	52
9	15	9.569567	10.430433	9.601754	10.398246	10.032187	9.967813	45	51
10	30	9.569646	10.430354	9.601846	10.398154	10.032200	9.967800	30	50
11	45	9.569725	10.430275	9.601937	10.398063	10.032212	9.967788	15	49
12	48	9.569804	10.430196	9.602029	10.397971	10.032225	9.967775	12	48
13	15	9.569883	10.430117	9.602121	10.397879	10.032237	9.967763	45	47
14	30	9.569962	10.430038	9.602212	10.397788	10.032250	9.967750	30	46
15	45	9.570041	10.429959	9.602304	10.397696	10.032263	9.967737	15	45
16	49	9.570120	10.429880	9.602395	10.397605	10.032275	9.967725	11	44
17	15	9.570199	10.429801	9.602487	10.397513	10.032288	9.967712	45	43
18	30	9.570278	10.429722	9.602578	10.397422	10.032301	9.967699	30	42
19	45	9.570357	10.429643	9.602670	10.397330	10.032314	9.967687	15	41
20	50	9.570435	10.429565	9.602761	10.397239	10.032326	9.967674	10	40
21	15	9.570514	10.429486	9.602853	10.397147	10.032339	9.967661	45	39
22	30	9.570593	10.429407	9.602944	10.397056	10.032351	9.967649	30	38
23	45	9.570672	10.429328	9.603036	10.396964	10.032364	9.967636	15	37
24	51	9.570751	10.429249	9.603127	10.396873	10.032377	9.967623	9	36
25	15	9.570829	10.429171	9.603219	10.396781	10.032389	9.967611	45	35
26	30	9.570908	10.429092	9.603310	10.396690	10.032402	9.967598	30	34
27	45	9.570987	10.429013	9.603401	10.396599	10.032415	9.967585	15	33
28	52	9.571066	10.428934	9.603493	10.396507	10.032427	9.967573	8	32
29	15	9.571144	10.428856	9.603584	10.396416	10.032440	9.967560	45	31
30	30	9.571223	10.428777	9.603675	10.396325	10.032453	9.967547	30	30
31	45	9.571302	10.428698	9.603767	10.396233	10.032465	9.967535	15	29
32	53	9.571380	10.428620	9.603858	10.396142	10.032478	9.967522	7	28
33	15	9.571459	10.428541	9.603949	10.396051	10.032491	9.967509	45	27
34	30	9.571537	10.428463	9.604041	10.395959	10.032503	9.967497	30	26
35	45	9.571616	10.428384	9.604132	10.395868	10.032516	9.967484	15	25
36	54	9.571695	10.428305	9.604223	10.395777	10.032529	9.967471	6	24
37	15	9.571773	10.428227	9.604314	10.395686	10.032541	9.967459	45	23
38	30	9.571852	10.428148	9.604406	10.395594	10.032554	9.967446	30	22
39	45	9.571930	10.428070	9.604497	10.395503	10.032567	9.967433	15	21
40	55	9.572009	10.427991	9.604588	10.395412	10.032580	9.967420	5	20
41	15	9.572087	10.427913	9.604679	10.395321	10.032592	9.967408	45	19
42	30	9.572166	10.427834	9.604771	10.395229	10.032605	9.967395	30	18
43	45	9.572244	10.427756	9.604862	10.395138	10.032618	9.967382	15	17
44	56	9.572323	10.427677	9.604953	10.395047	10.032630	9.967370	4	16
45	15	9.572401	10.427599	9.605044	10.394956	10.032643	9.967357	45	15
46	30	9.572479	10.427521	9.605135	10.394865	10.032656	9.967344	30	14
47	45	9.572558	10.427442	9.605226	10.394774	10.032669	9.967331	15	13
48	57	9.572636	10.427364	9.605317	10.394683	10.032681	9.967319	3	12
49	15	9.572715	10.427285	9.605408	10.394592	10.032694	9.967306	45	11
50	30	9.572793	10.427207	9.605500	10.394500	10.032707	9.967293	30	10
51	45	9.572871	10.427129	9.605591	10.394409	10.032719	9.967281	15	9
52	58	9.572949	10.427051	9.605682	10.394318	10.032732	9.967268	2	8
53	15	9.573028	10.426972	9.605773	10.394227	10.032745	9.967255	45	7
54	30	9.573106	10.426894	9.605864	10.394136	10.032758	9.967242	30	6
55	45	9.573184	10.426816	9.605955	10.394045	10.032770	9.967230	15	5
56	59	9.573263	10.426737	9.606046	10.393954	10.032783	9.967217	1	4
57	15	9.573341	10.426659	9.606137	10.393863	10.032796	9.967204	45	3
58	30	9.573419	10.426581	9.606228	10.393772	10.032809	9.967191	30	2
59	45	9.573497	10.426503	9.606319	10.393681	10.032821	9.967179	15	1
60	60	9.573575	10.426425	9.606410	10.393590	10.032834	9.967166	0	0
sec.	side.	coscant.	cotangent.	tangent.	secant.	sine.	sec.	side.	
4° 32'.		LOG. SINES, &c.						68 deg.	

1° 28'		LOG. SINES, &c. (1.)						22 deg.	
sec.	min.	sine.	coscant.	tangent.	cotangent.	secant.	cosec.	sec.	min.
0	0	9.573678	10.426425	9.606410	10.393590	10.032834	9.967166	60	60
1	■	9.573654	10.426346	9.606500	10.393500	10.032847	9.967153	■	59
2	30	9.573732	10.426268	9.606591	10.393409	10.032860	9.967140	30	58
3	45	9.573810	10.426190	9.606682	10.393318	10.032872	9.967128	15	57
4	1	9.573888	10.426112	9.606773	10.393227	10.032885	9.967115	59	56
5	15	9.573966	10.426034	9.606864	10.393136	10.032898	9.967102	45	55
6	30	9.574044	10.425956	9.606955	10.393045	10.032911	9.967089	30	54
7	45	9.574122	10.425878	9.607046	10.392954	10.032924	9.967076	15	53
8	2	9.574200	10.425800	9.607137	10.392863	10.032938	9.967064	58	52
9	15	9.574278	10.425722	9.607227	10.392773	10.032949	9.967051	45	51
10	30	9.574356	10.425644	9.607318	10.392682	10.032962	9.967038	30	50
11	45	9.574434	10.425566	9.607409	10.392591	10.032975	9.967025	15	49
12	3	9.574512	10.425488	9.607500	10.392500	10.032988	9.967012	57	48
13	15	9.574590	10.425410	9.607590	10.392410	10.033000	9.967000	45	47
14	30	9.574668	10.425332	9.607681	10.392319	10.033013	9.966987	30	46
15	45	9.574746	10.425254	9.607772	10.392228	10.033026	9.966974	15	45
16	4	9.574824	10.425176	9.607863	10.392137	10.033039	9.966961	56	44
17	15	9.574902	10.425098	9.607953	10.392047	10.033052	9.966948	45	43
18	■	9.574980	10.425020	9.608044	10.391956	10.033064	9.966936	30	42
19	45	9.575058	10.424942	9.608135	10.391865	10.033077	9.966923	15	41
20	5	9.575136	10.424864	9.608225	10.391775	10.033090	9.966910	55	40
21	15	9.575213	10.424787	9.608316	10.391684	10.033103	9.966897	45	39
22	30	9.575291	10.424709	9.608407	10.391593	10.033116	9.966884	30	38
23	45	9.575369	10.424631	9.608497	10.391503	10.033128	9.966872	15	37
24	6	9.575447	10.424553	9.608588	10.391412	10.033141	9.966859	54	36
25	15	9.575525	10.424475	9.608679	10.391321	10.033154	9.966846	45	35
26	30	9.575602	10.424398	9.608769	10.391231	10.033167	9.966833	30	34
27	45	9.575680	10.424320	9.608860	10.391140	10.033180	9.966820	15	33
28	7	9.575758	10.424242	9.608950	10.391050	10.033193	9.966807	53	32
29	15	9.575835	10.424165	9.609041	10.390959	10.033205	9.966795	45	31
30	30	9.575913	10.424087	9.609131	10.390869	10.033218	9.966782	30	30
31	45	9.575991	10.424009	9.609222	10.390778	10.033231	9.966769	15	29
32	8	9.576068	10.423932	9.609312	10.390688	10.033244	9.966756	52	28
33	15	9.576146	10.423854	9.609403	10.390597	10.033257	9.966743	45	27
34	30	9.576224	10.423776	9.609493	10.390507	10.033270	9.966730	30	26
35	45	9.576301	10.423699	9.609584	10.390416	10.033282	9.966718	15	25
36	9	9.576379	10.423621	9.609674	10.390326	10.033295	9.966705	51	24
37	15	9.576457	10.423543	9.609765	10.390235	10.033308	9.966692	45	23
38	30	9.576534	10.423466	9.609855	10.390145	10.033321	9.966679	30	22
39	45	9.576612	10.423388	9.609945	10.390055	10.033334	9.966666	15	21
40	10	9.576689	10.423311	9.610036	10.389964	10.033347	9.966653	50	20
41	15	9.576767	10.423233	9.610126	10.389874	10.033360	9.966640	45	19
42	30	9.576844	10.423156	9.610217	10.389783	10.033372	9.966628	30	18
43	45	9.576922	10.423078	9.610307	10.389693	10.033385	9.966615	15	17
44	11	9.576999	10.423001	9.610397	10.389603	10.033398	9.966602	49	■
45	15	9.577077	10.422923	9.610488	10.389512	10.033411	9.966589	45	15
46	■	9.577154	10.422846	9.610578	10.389422	10.033424	9.966576	30	14
47	45	9.577231	10.422769	9.610668	10.389332	10.033437	9.966563	15	13
48	12	9.577309	10.422691	9.610759	10.389241	10.033450	9.966550	48	12
49	15	9.577386	10.422614	9.610849	10.389151	10.033463	9.966537	45	11
50	■	9.577464	10.422536	9.610939	10.389061	10.033476	9.966524	30	10
51	■	9.577541	10.422459	9.611029	10.388971	10.033488	9.966512	15	9
52	13	9.577618	10.422382	9.611120	10.388880	10.033501	9.966499	47	■
53	15	9.577696	10.422304	9.611210	10.388790	10.033514	9.966486	45	7
54	30	9.577773	10.422227	9.611300	10.388700	10.033527	9.966473	30	6
55	45	9.577850	10.422150	9.611390	10.388610	10.033540	9.966460	15	5
56	14	9.577927	10.422073	9.611480	10.388520	10.033553	9.966447	46	4
57	15	9.578005	10.421995	9.611570	10.388430	10.033566	9.966434	45	3
58	30	9.578082	10.421918	9.611661	10.388339	10.033579	9.966421	30	2
59	45	9.578159	10.421841	9.611751	10.388249	10.033592	9.966408	15	1
60	15	9.578236	10.421764	9.611841	10.388159	10.033605	9.966395	45	0
sec.	min.	sine.	coscant.	tangent.	cotangent.	secant.	cosec.	sec.	min.
4° 31'		LOG. SINES, &c.						67 deg.	

1° 29"		LOG. SINES, &c. (L)						22 deg.	
sec.	"	sine.	coscant.	tangent.	cotangent.	secant.	cosecant.	"	sec.
0	15	9.578236	10.421784	9.611041	10.388159	10.033605	9.966395	45	60
1	15	9.578314	10.421666	9.611931	10.388060	10.033618	9.966382	46	59
2	30	9.578391	10.421549	9.612021	10.387979	10.033630	9.966370	30	58
3	45	9.578468	10.421432	9.612111	10.387899	10.033643	9.966357	15	57
4	16	9.578545	10.421315	9.612201	10.387799	10.033656	9.966344	44	56
5	15	9.578622	10.421197	9.612291	10.387709	10.033669	9.966331	45	55
6	30	9.578699	10.421080	9.612381	10.387619	10.033682	9.966318	30	54
7	45	9.578776	10.420962	9.612471	10.387529	10.033695	9.966305	15	53
8	17	9.578853	10.421147	9.612561	10.387439	10.033708	9.966292	43	52
9	15	9.578930	10.421070	9.612651	10.387349	10.033721	9.966279	45	51
10	30	9.579008	10.420992	9.612741	10.387259	10.033734	9.966266	30	50
11	45	9.579085	10.420915	9.612831	10.387169	10.033747	9.966253	15	49
12	18	9.579162	10.420838	9.612921	10.387079	10.033760	9.966240	42	48
13	15	9.579239	10.420761	9.613011	10.386989	10.033773	9.966227	45	47
14	30	9.579316	10.420684	9.613101	10.386899	10.033786	9.966214	30	46
15	45	9.579393	10.420607	9.613191	10.386809	10.033799	9.966201	15	45
16	19	9.579469	10.420531	9.613281	10.386719	10.033812	9.966188	41	44
17	15	9.579546	10.420454	9.613371	10.386629	10.033825	9.966175	45	43
18	30	9.579623	10.420377	9.613461	10.386539	10.033838	9.966162	30	42
19	45	9.579700	10.420300	9.613551	10.386449	10.033851	9.966149	15	41
20	20	9.579777	10.420223	9.613641	10.386359	10.033864	9.966136	40	40
21	15	9.579854	10.420146	9.613730	10.386270	10.033877	9.966123	45	39
22	30	9.579931	10.420069	9.613820	10.386180	10.033890	9.966110	30	38
23	45	9.580008	10.419992	9.613910	10.386090	10.033903	9.966097	15	37
24	21	9.580084	10.419916	9.614000	10.386000	10.033915	9.966085	39	36
25	15	9.580161	10.419839	9.614090	10.385910	10.033928	9.966072	45	35
26	30	9.580238	10.419762	9.614180	10.385820	10.033941	9.966060	30	34
27	45	9.580315	10.419685	9.614269	10.385731	10.033954	9.966046	15	33
28	22	9.580392	10.419608	9.614359	10.385641	10.033967	9.966033	37	32
29	15	9.580468	10.419532	9.614449	10.385551	10.033980	9.966020	45	31
30	30	9.580545	10.419455	9.614539	10.385461	10.033993	9.966007	30	30
31	45	9.580622	10.419378	9.614628	10.385372	10.034006	9.965994	15	29
32	23	9.580699	10.419301	9.614718	10.385282	10.034019	9.965981	37	28
33	15	9.580775	10.419225	9.614808	10.385192	10.034032	9.965968	45	27
34	30	9.580852	10.419148	9.614897	10.385103	10.034045	9.965955	30	26
35	45	9.580929	10.419071	9.614987	10.385013	10.034058	9.965942	15	25
36	24	9.581005	10.418995	9.615077	10.384923	10.034072	9.965928	36	24
37	15	9.581082	10.418918	9.615166	10.384834	10.034085	9.965915	45	23
38	30	9.581158	10.418842	9.615256	10.384744	10.034098	9.965902	30	22
39	45	9.581235	10.418765	9.615345	10.384655	10.034111	9.965889	15	21
40	25	9.581312	10.418688	9.615435	10.384565	10.034124	9.965876	35	20
41	15	9.581388	10.418612	9.615525	10.384475	10.034137	9.965863	45	19
42	30	9.581465	10.418535	9.615614	10.384386	10.034150	9.965850	30	18
43	45	9.581541	10.418459	9.615704	10.384296	10.034163	9.965837	15	17
44	26	9.581618	10.418382	9.615793	10.384207	10.034176	9.965824	34	16
45	15	9.581694	10.418306	9.615883	10.384117	10.034189	9.965811	45	15
46	30	9.581771	10.418229	9.615972	10.384028	10.034202	9.965798	30	14
47	45	9.581847	10.418153	9.616062	10.383938	10.034215	9.965786	15	13
48	27	9.581924	10.418076	9.616151	10.383849	10.034228	9.965773	33	12
49	15	9.582000	10.418000	9.616241	10.383759	10.034241	9.965760	45	11
50	30	9.582076	10.417924	9.616330	10.383670	10.034254	9.965746	30	10
51	45	9.582153	10.417847	9.616420	10.383580	10.034267	9.965733	15	9
52	28	9.582230	10.417771	9.616509	10.383491	10.034280	9.965720	32	8
53	16	9.582305	10.417695	9.616599	10.383401	10.034293	9.965707	45	7
54	30	9.582382	10.417618	9.616688	10.383312	10.034306	9.965694	30	6
55	45	9.582458	10.417542	9.616777	10.383223	10.034319	9.965681	15	5
56	29	9.582534	10.417466	9.616867	10.383133	10.034332	9.965668	31	4
57	15	9.582611	10.417389	9.616956	10.383044	10.034345	9.965655	45	3
58	30	9.582687	10.417313	9.617046	10.382954	10.034358	9.965641	30	2
59	45	9.582763	10.417237	9.617135	10.382865	10.034372	9.965628	15	1
60	30	9.582840	10.417160	9.617224	10.382776	10.034385	9.965615	30	0
sec.	"	co.sine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
4° 30'		LOG. SINES, &c.						67 deg.	

1° 30'.		LOG. SINES, &c. (t.)						22 deg.	
sec.	min.	sine.	cosecant.	tangent.	cotangent.	secant.	cosec.	sec.	min.
0	30	9.583840	10.417160	9.617224	10.382776	10.034385	9.965615	30	60
1	15	9.583916	10.417084	9.617314	10.382686	10.034398	9.965602	45	50
2	30	9.583992	10.417008	9.617403	10.382597	10.034411	9.965589	30	58
3	45	9.584068	10.416932	9.617492	10.382508	10.034424	9.965576	15	57
4	31	9.584144	10.416856	9.617581	10.382419	10.034437	9.965563	29	56
5	15	9.584221	10.416779	9.617671	10.382329	10.034450	9.965550	45	55
6	30	9.584297	10.416703	9.617760	10.382240	10.034463	9.965537	30	54
7	45	9.584373	10.416627	9.617849	10.382151	10.034476	9.965524	15	53
8	32	9.584449	10.416551	9.617938	10.382062	10.034489	9.965511	28	52
9	15	9.584525	10.416475	9.618028	10.381972	10.034503	9.965497	45	51
10	30	9.584601	10.416399	9.618117	10.381883	10.034516	9.965484	30	50
11	45	9.584677	10.416323	9.618206	10.381794	10.034529	9.965471	15	49
12	33	9.584753	10.416247	9.618295	10.381705	10.034542	9.965458	27	48
13	15	9.584830	10.416170	9.618384	10.381616	10.034555	9.965445	45	47
14	30	9.584906	10.416094	9.618474	10.381526	10.034568	9.965432	30	46
15	45	9.584982	10.416018	9.618563	10.381437	10.034581	9.965419	15	45
16	34	9.585058	10.415942	9.618652	10.381348	10.034594	9.965406	26	44
17	15	9.585134	10.415866	9.618741	10.381259	10.034607	9.965393	45	43
18	30	9.585210	10.415790	9.618830	10.381170	10.034621	9.965379	30	42
19	45	9.585286	10.415715	9.618919	10.381081	10.034634	9.965366	15	41
20	35	9.585361	10.415639	9.619008	10.380992	10.034647	9.965353	25	40
21	15	9.585437	10.415563	9.619097	10.380903	10.034660	9.965340	45	39
22	30	9.585513	10.415487	9.619186	10.380814	10.034673	9.965327	30	38
23	45	9.585589	10.415411	9.619275	10.380725	10.034686	9.965314	15	37
24	36	9.585665	10.415335	9.619364	10.380636	10.034699	9.965301	24	36
25	15	9.585741	10.415259	9.619453	10.380547	10.034713	9.965287	45	35
26	30	9.585817	10.415183	9.619542	10.380458	10.034726	9.965274	30	34
27	45	9.585893	10.415107	9.619631	10.380369	10.034739	9.965261	15	33
28	37	9.585969	10.415032	9.619720	10.380280	10.034752	9.965248	23	32
29	15	9.586044	10.414956	9.619809	10.380191	10.034765	9.965235	45	31
30	30	9.586120	10.414880	9.619898	10.380102	10.034778	9.965222	30	30
31	45	9.586196	10.414804	9.619987	10.380013	10.034792	9.965208	15	29
32	38	9.586272	10.414728	9.620076	10.379924	10.034805	9.965195	22	28
33	15	9.586347	10.414653	9.620165	10.379835	10.034818	9.965182	45	27
34	30	9.586423	10.414577	9.620254	10.379746	10.034831	9.965169	30	26
35	45	9.586499	10.414501	9.620343	10.379657	10.034844	9.965156	15	25
36	39	9.586574	10.414426	9.620432	10.379568	10.034857	9.965143	21	24
37	15	9.586650	10.414350	9.620521	10.379479	10.034871	9.965129	45	23
38	30	9.586726	10.414274	9.620609	10.379390	10.034884	9.965116	30	22
39	45	9.586802	10.414199	9.620698	10.379302	10.034897	9.965103	15	21
40	40	9.586877	10.414123	9.620787	10.379213	10.034910	9.965090	20	20
41	15	9.586953	10.414047	9.620876	10.379124	10.034923	9.965077	45	19
42	30	9.587028	10.413972	9.620965	10.379035	10.034937	9.965063	30	18
43	45	9.587104	10.413896	9.621054	10.378946	10.034950	9.965050	15	17
44	41	9.587179	10.413821	9.621142	10.378858	10.034963	9.965037	19	16
45	15	9.587255	10.413745	9.621231	10.378769	10.034976	9.965024	45	15
46	30	9.587330	10.413670	9.621320	10.378680	10.034989	9.965011	30	14
47	45	9.587406	10.413594	9.621409	10.378591	10.035003	9.964997	15	13
48	42	9.587481	10.413518	9.621497	10.378503	10.035016	9.964984	18	12
49	15	9.587557	10.413443	9.621586	10.378414	10.035029	9.964971	45	11
50	30	9.587632	10.413368	9.621675	10.378325	10.035042	9.964958	30	10
51	45	9.587708	10.413292	9.621763	10.378237	10.035055	9.964945	15	9
52	43	9.587783	10.413217	9.621852	10.378148	10.035069	9.964931	17	8
53	15	9.587859	10.413141	9.621941	10.378059	10.035082	9.964918	45	7
54	30	9.587934	10.413066	9.622029	10.377971	10.035095	9.964905	30	6
55	45	9.588010	10.412990	9.622118	10.377882	10.035108	9.964892	15	5
56	44	9.588086	10.412915	9.622207	10.377793	10.035122	9.964878	16	4
57	15	9.588160	10.412840	9.622295	10.377705	10.035135	9.964865	45	3
58	30	9.588236	10.412764	9.622384	10.377616	10.035148	9.964852	30	2
59	45	9.588311	10.412689	9.622472	10.377528	10.035161	9.964839	15	1
60	45	9.588386	10.412614	9.622561	10.377439	10.035174	9.964826	15	0
4° 30'.		LOG. SINES, &c.						67 deg.	
sec.	min.	sine.	cosecant.	tangent.	cotangent.	secant.	cosec.	sec.	min.

1° 31'.		LOG. SINES, &c. (L.)						22 deg.	
deg.	'	sin.	cos.	tan.	cot.	sec.	cosec.		sec.
0	45	9.587380	10.412614	9.622561	10.377439	10.035174	9.964826	15	60
1	15	9.587462	10.412538	9.622649	10.377351	10.035174	9.964812	45	59
2	30	9.587537	10.412463	9.622738	10.377262	10.035201	9.964799	30	58
3	45	9.587612	10.412388	9.622826	10.377174	10.035214	9.964786	15	57
4	46	9.587688	10.412312	9.622915	10.377085	10.035227	9.964773	14	56
5	15	9.587763	10.412237	9.623003	10.376997	10.035241	9.964759	45	55
6	30	9.587838	10.412162	9.623092	10.376908	10.035254	9.964746	30	54
7	45	9.587913	10.412087	9.623180	10.376820	10.035267	9.964733	15	53
8	47	9.587988	10.412012	9.623269	10.376731	10.035280	9.964719	13	52
9	15	9.588064	10.411936	9.623357	10.376643	10.035294	9.964706	45	51
10	30	9.588139	10.411861	9.623446	10.376554	10.035307	9.964693	30	50
11	45	9.588214	10.411786	9.623534	10.376466	10.035320	9.964680	15	49
12	48	9.588289	10.411711	9.623623	10.376377	10.035334	9.964666	12	48
13	15	9.588364	10.411636	9.623711	10.376289	10.035347	9.964653	45	47
14	30	9.588439	10.411561	9.623799	10.376201	10.035360	9.964640	30	46
15	45	9.588514	10.411486	9.623888	10.376112	10.035373	9.964627	15	45
16	49	9.588589	10.411410	9.623976	10.376024	10.035387	9.964613	11	44
17	15	9.588665	10.411335	9.624065	10.375935	10.035400	9.964600	45	43
18	30	9.588740	10.411260	9.624153	10.375847	10.035414	9.964587	30	42
19	45	9.588815	10.411185	9.624241	10.375759	10.035427	9.964573	15	41
20	50	9.588890	10.411110	9.624330	10.375670	10.035440	9.964560	10	40
21	15	9.588965	10.411035	9.624418	10.375582	10.035453	9.964547	45	39
22	30	9.589040	10.410960	9.624506	10.375494	10.035466	9.964534	30	38
23	45	9.589115	10.410885	9.624594	10.375406	10.035480	9.964520	15	37
24	51	9.589190	10.410810	9.624683	10.375317	10.035493	9.964507	11	36
25	15	9.589265	10.410735	9.624771	10.375229	10.035506	9.964494	45	35
26	30	9.589339	10.410661	9.624859	10.375141	10.035520	9.964480	30	34
27	45	9.589414	10.410586	9.624947	10.375053	10.035533	9.964467	15	33
28	52	9.589489	10.410511	9.625036	10.374964	10.035546	9.964454	8	32
29	15	9.589564	10.410436	9.625124	10.374876	10.035560	9.964440	45	31
30	30	9.589639	10.410361	9.625212	10.374788	10.035573	9.964427	30	30
31	45	9.589714	10.410286	9.625300	10.374700	10.035586	9.964414	15	29
32	53	9.589789	10.410211	9.625388	10.374612	10.035600	9.964400	7	28
33	15	9.589864	10.410136	9.625476	10.374524	10.035613	9.964387	45	27
34	30	9.589939	10.410061	9.625565	10.374435	10.035626	9.964374	30	26
35	45	9.590013	10.409986	9.625653	10.374347	10.035640	9.964360	15	25
36	54	9.590088	10.409912	9.625741	10.374259	10.035653	9.964347	6	24
37	15	9.590163	10.409837	9.625829	10.374171	10.035666	9.964334	45	23
38	30	9.590238	10.409763	9.625917	10.374083	10.035680	9.964320	30	22
39	45	9.590312	10.409688	9.626005	10.373995	10.035693	9.964307	15	21
40	55	9.590387	10.409613	9.626093	10.373907	10.035706	9.964294	5	20
41	15	9.590462	10.409538	9.626181	10.373819	10.035720	9.964280	45	19
42	30	9.590537	10.409464	9.626269	10.373731	10.035733	9.964267	30	18
43	45	9.590611	10.409389	9.626357	10.373643	10.035746	9.964254	15	17
44	56	9.590686	10.409314	9.626445	10.373555	10.035760	9.964240	4	16
45	15	9.590760	10.409240	9.626533	10.373467	10.035773	9.964227	45	15
46	30	9.590835	10.409165	9.626621	10.373379	10.035787	9.964213	30	14
47	45	9.590909	10.409091	9.626709	10.373291	10.035800	9.964200	15	13
48	57	9.590984	10.409016	9.626797	10.373203	10.035813	9.964187	3	12
49	15	9.591059	10.408941	9.626885	10.373115	10.035827	9.964173	45	11
50	30	9.591133	10.408867	9.626973	10.373027	10.035840	9.964160	30	10
51	45	9.591208	10.408792	9.627061	10.372939	10.035853	9.964147	15	9
52	58	9.591282	10.408718	9.627149	10.372851	10.035867	9.964133	2	8
53	15	9.591357	10.408643	9.627237	10.372763	10.035880	9.964120	45	7
54	30	9.591431	10.408569	9.627325	10.372675	10.035894	9.964106	30	6
55	45	9.591506	10.408494	9.627413	10.372587	10.035907	9.964093	15	5
56	59	9.591580	10.408420	9.627501	10.372499	10.035920	9.964079	1	4
57	15	9.591655	10.408345	9.627589	10.372412	10.035934	9.964066	45	3
58	30	9.591729	10.408271	9.627676	10.372324	10.035947	9.964053	30	2
59	45	9.591804	10.408196	9.627764	10.372236	10.035961	9.964040	15	1
60	60	9.591878	10.408122	9.627852	10.372148	10.035974	9.964026	0	0
deg.	'	cosine	secant	cotangent	tangent	cosecant	sine	'	sec.
4° 28'		LOG. SINES, &c.						67 deg.	

1° 38'		LOG. SINES, &c. (t.)						23 deg.	
sec.	min.	sin.	coscant.	tan-nt	colangent.	secant.	cosec.	sec.	min.
0	0	9.591878	10.408123	9.627852	10.372148	10.035074	9.964926	60	1.0
1	15	9.591952	10.408048	9.627940	10.372060	10.035087	9.964913	45	59
2	30	9.592027	10.407973	9.628027	10.371973	10.035100	9.964899	30	58
3	45	9.592101	10.407899	9.628115	10.371885	10.035114	9.964886	15	57
4	1	9.592175	10.407825	9.628203	10.371797	10.035128	9.964872	59	56
5	15	9.592250	10.407750	9.628291	10.371709	10.035141	9.964859	45	55
6	30	9.592324	10.407676	9.628379	10.371621	10.035154	9.964846	30	54
7	45	9.592398	10.407602	9.628466	10.371534	10.035168	9.964832	15	53
8	2	9.592473	10.407527	9.628554	10.371446	10.035181	9.964819	58	52
9	15	9.592547	10.407453	9.628642	10.371358	10.035195	9.964805	45	51
10	30	9.592621	10.407379	9.628729	10.371271	10.035208	9.964792	30	50
11	45	9.592696	10.407304	9.628817	10.371183	10.035222	9.964778	15	49
12	3	9.592770	10.407230	9.628905	10.371095	10.035235	9.964765	57	48
13	15	9.592844	10.407156	9.628992	10.371008	10.035249	9.964751	45	47
14	30	9.592918	10.407082	9.629080	10.370920	10.035262	9.964738	30	46
15	45	9.592992	10.407008	9.629168	10.370832	10.035276	9.964724	15	45
16	4	9.593067	10.406933	9.629256	10.370744	10.035289	9.964711	56	44
17	15	9.593141	10.406859	9.629343	10.370657	10.035303	9.964697	45	43
18	30	9.593215	10.406785	9.629430	10.370570	10.035316	9.964684	30	42
19	45	9.593289	10.406711	9.629518	10.370482	10.035330	9.964670	15	41
20	5	9.593363	10.406637	9.629606	10.370394	10.035343	9.964657	55	40
21	15	9.593437	10.406563	9.629693	10.370307	10.035357	9.964643	45	39
22	30	9.593511	10.406489	9.629781	10.370219	10.035370	9.964630	30	38
23	45	9.593585	10.406415	9.629868	10.370132	10.035384	9.964616	15	37
24	6	9.593659	10.406341	9.629956	10.370044	10.035397	9.964603	54	36
25	15	9.593733	10.406267	9.630043	10.369957	10.035411	9.964589	45	35
26	30	9.593807	10.406193	9.630131	10.369869	10.035424	9.964576	30	34
27	45	9.593881	10.406119	9.630218	10.369782	10.035438	9.964562	15	33
28	7	9.593955	10.406045	9.630306	10.369694	10.035451	9.964549	53	32
29	15	9.594029	10.405971	9.630393	10.369607	10.035465	9.964535	45	31
30	30	9.594103	10.405897	9.630481	10.369519	10.035478	9.964522	30	30
31	45	9.594177	10.405823	9.630568	10.369432	10.035492	9.964508	15	29
32	8	9.594251	10.405749	9.630656	10.369344	10.035505	9.964495	52	28
33	15	9.594325	10.405675	9.630743	10.369257	10.035519	9.964481	45	27
34	30	9.594399	10.405601	9.630830	10.369170	10.035532	9.964468	30	26
35	45	9.594473	10.405527	9.630918	10.369082	10.035546	9.964454	15	25
36	9	9.594547	10.405453	9.631005	10.368995	10.035559	9.964441	51	24
37	15	9.594621	10.405379	9.631092	10.368908	10.035573	9.964427	45	23
38	30	9.594695	10.405305	9.631180	10.368820	10.035586	9.964414	30	22
39	45	9.594768	10.405232	9.631267	10.368733	10.035600	9.964400	15	21
40	10	9.594842	10.405158	9.631354	10.368646	10.035613	9.964387	50	20
41	15	9.594916	10.405084	9.631442	10.368558	10.035627	9.964373	45	19
42	30	9.594990	10.405010	9.631529	10.368471	10.035640	9.964360	30	18
43	45	9.595064	10.404936	9.631616	10.368384	10.035654	9.964346	15	17
44	11	9.595137	10.404863	9.631704	10.368296	10.035667	9.964333	49	16
45	15	9.595211	10.404789	9.631791	10.368209	10.035681	9.964319	45	15
46	30	9.595285	10.404715	9.631878	10.368122	10.035694	9.964306	30	14
47	45	9.595358	10.404642	9.631965	10.368035	10.035708	9.964292	15	13
48	12	9.595432	10.404568	9.632053	10.367947	10.035721	9.964279	48	12
49	15	9.595506	10.404494	9.632140	10.367860	10.035735	9.964265	45	11
50	30	9.595579	10.404421	9.632227	10.367773	10.035748	9.964252	30	10
51	45	9.595653	10.404347	9.632314	10.367686	10.035762	9.964238	15	9
52	13	9.595727	10.404273	9.632401	10.367599	10.035775	9.964225	47	8
53	15	9.595800	10.404200	9.632489	10.367511	10.035789	9.964211	45	7
54	30	9.595874	10.404126	9.632576	10.367424	10.035802	9.964198	30	6
55	45	9.595948	10.404052	9.632663	10.367337	10.035816	9.964184	15	5
56	14	9.596021	10.403979	9.632750	10.367250	10.035829	9.964171	46	4
57	15	9.596095	10.403905	9.632837	10.367163	10.035843	9.964157	45	3
58	30	9.596168	10.403832	9.632924	10.367076	10.035856	9.964144	30	2
59	45	9.596242	10.403758	9.633011	10.366989	10.035870	9.964130	15	1
60	15	9.596316	10.403685	9.633098	10.366902	10.035883	9.964117	45	0
sec.	min.	sin.	coscant.	tan-nt	colangent.	secant.	cosec.	sec.	min.
4° 27'		LOG. SINES, &c.						66 deg.	

1° 25'.		LOG. SINES, &c. (t.)					23 deg.	
sec.	"	sine	coscant	langent	cotangent	secant	cosine	"
0	15	9.596315	10.403685	9.633098	10.366902	10.036783	9.963217	45
1	15	9.596389	10.403611	9.633186	10.366814	10.036797	9.963203	45
2	30	9.596463	10.403538	9.633273	10.366727	10.036810	9.963190	30
3	45	9.596536	10.403464	9.633360	10.366640	10.036824	9.963176	15
4	18	9.596609	10.403391	9.633447	10.366553	10.036838	9.963162	44
5	15	9.596683	10.403317	9.633534	10.366466	10.036851	9.963149	45
6	30	9.596756	10.403244	9.633621	10.366379	10.036865	9.963135	30
7	45	9.596830	10.403170	9.633708	10.366292	10.036878	9.963122	15
8	17	9.596903	10.403097	9.633795	10.366205	10.036892	9.963108	43
9	15	9.596976	10.403024	9.633882	10.366118	10.036905	9.963095	45
10	30	9.597050	10.402950	9.633969	10.366031	10.036919	9.963081	30
11	45	9.597123	10.402877	9.634056	10.365944	10.036933	9.963067	15
12	18	9.597196	10.402804	9.634143	10.365857	10.036946	9.963054	42
13	15	9.597270	10.402730	9.634230	10.365770	10.036960	9.963040	45
14	30	9.597343	10.402657	9.634316	10.365684	10.036973	9.963027	30
15	45	9.597416	10.402584	9.634403	10.365597	10.036987	9.963013	15
16	19	9.597490	10.402510	9.634490	10.365510	10.037001	9.962999	41
17	15	9.597563	10.402437	9.634577	10.365423	10.037014	9.962986	45
18	30	9.597636	10.402364	9.634664	10.365336	10.037028	9.962972	30
19	45	9.597709	10.402291	9.634751	10.365249	10.037042	9.962958	15
20	20	9.597783	10.402217	9.634838	10.365162	10.037055	9.962945	40
21	15	9.597856	10.402144	9.634925	10.365075	10.037069	9.962931	45
22	30	9.597929	10.402071	9.635011	10.364988	10.037082	9.962918	30
23	45	9.598002	10.401998	9.635098	10.364902	10.037096	9.962904	15
24	21	9.598075	10.401925	9.635185	10.364815	10.037110	9.962890	39
25	15	9.598148	10.401851	9.635272	10.364728	10.037123	9.962877	45
26	30	9.598222	10.401778	9.635359	10.364641	10.037137	9.962863	30
27	45	9.598295	10.401705	9.635445	10.364555	10.037151	9.962849	15
28	22	9.598368	10.401632	9.635532	10.364468	10.037164	9.962836	38
29	15	9.598441	10.401559	9.635619	10.364381	10.037178	9.962822	45
30	30	9.598514	10.401486	9.635706	10.364294	10.037192	9.962808	30
31	45	9.598587	10.401413	9.635792	10.364208	10.037205	9.962795	15
32	23	9.598660	10.401340	9.635879	10.364121	10.037219	9.962781	37
33	15	9.598733	10.401267	9.635966	10.364034	10.037232	9.962768	45
34	30	9.598806	10.401194	9.636052	10.363948	10.037246	9.962754	30
35	45	9.598879	10.401121	9.636139	10.363861	10.037260	9.962740	15
36	24	9.598952	10.401048	9.636226	10.363774	10.037273	9.962727	36
37	15	9.599025	10.400975	9.636312	10.363688	10.037287	9.962713	45
38	30	9.599098	10.400902	9.636399	10.363601	10.037301	9.962699	30
39	45	9.599171	10.400829	9.636486	10.363514	10.037314	9.962686	15
40	25	9.599244	10.400756	9.636572	10.363428	10.037328	9.962672	35
41	15	9.599317	10.400683	9.636659	10.363341	10.037342	9.962658	45
42	30	9.599390	10.400610	9.636745	10.363255	10.037356	9.962644	30
43	45	9.599463	10.400537	9.636832	10.363168	10.037369	9.962631	15
44	26	9.599536	10.400464	9.636918	10.363082	10.037383	9.962617	34
45	15	9.599609	10.400392	9.637005	10.362995	10.037397	9.962603	45
46	30	9.599681	10.400319	9.637092	10.362908	10.037410	9.962590	30
47	45	9.599754	10.400246	9.637178	10.362822	10.037424	9.962576	15
48	27	9.599827	10.400173	9.637265	10.362735	10.037438	9.962562	33
49	15	9.599900	10.400100	9.637351	10.362649	10.037451	9.962549	45
50	30	9.599973	10.400027	9.637438	10.362562	10.037465	9.962535	30
51	45	9.600046	10.399955	9.637524	10.362476	10.037479	9.962521	15
52	28	9.600118	10.399882	9.637611	10.362389	10.037492	9.962508	32
53	15	9.600191	10.399809	9.637697	10.362303	10.037506	9.962494	45
54	30	9.600264	10.399736	9.637783	10.362217	10.037520	9.962480	30
55	45	9.600337	10.399664	9.637870	10.362130	10.037534	9.962466	15
56	29	9.600409	10.399591	9.637956	10.362044	10.037547	9.962453	31
57	15	9.600482	10.399518	9.638043	10.361957	10.037561	9.962439	45
58	30	9.600554	10.399446	9.638129	10.361871	10.037575	9.962425	30
59	45	9.600627	10.399373	9.638215	10.361785	10.037589	9.962411	15
60	30	9.600700	10.399300	9.638302	10.361698	10.037602	9.962398	30
sec.	"	sine	coscant	langent	cotangent	secant	cosine	"
4° 20'.		LOG. SINES, &c.					66 deg.	

1° 34'			LOG. SINES, &c. (L.)						23 deg.		
sec.	'	sec.	coscant.	tangent.	cotangent.	secant.	cosine.	'	sec.	'	sec.
0	30	9.600700	10.399300	9.638302	10.361698	10.037602	9.962398	30	60		
1	■	9.600772	10.399228	9.638383	10.361612	10.037616	9.962384	45	59		
2	30	9.600845	10.399155	9.638475	10.361525	10.037630	9.962370	30	58		
3	45	9.600917	10.399083	9.638561	10.361439	10.037643	9.962357	15	57		
4	31	9.600990	10.399010	9.638647	10.361353	10.037657	9.962343	29	■		
5	15	9.601063	10.398937	9.638734	10.361266	10.037671	9.962329	45	55		
6	30	9.601135	10.398865	9.638820	10.361180	10.037685	9.962315	■	54		
7	45	9.601208	10.398792	9.638906	10.361094	10.037699	9.962302	15	53		
8	32	9.601280	10.398720	9.638992	10.361008	10.037712	9.962288	28	52		
9	15	9.601353	10.398647	9.639079	10.360921	10.037726	9.962274	45	51		
10	30	9.601425	10.398575	9.639165	10.360835	10.037740	9.962260	30	50		
11	45	9.601498	10.398502	9.639251	10.360749	10.037753	9.962247	15	49		
12	33	9.601570	10.398430	9.639337	10.360663	10.037767	9.962233	27	48		
13	15	9.601643	10.398357	9.639424	10.360576	10.037781	9.962219	45	47		
14	30	9.601715	10.398285	9.639510	10.360490	10.037795	9.962205	30	46		
15	45	9.601788	10.398212	9.639596	10.360404	10.037809	9.962191	15	45		
16	34	9.601860	10.398140	9.639682	10.360318	10.037822	9.962178	26	44		
17	15	9.601933	10.398068	9.639768	10.360232	10.037836	9.962164	45	43		
18	30	9.602005	10.397995	9.639853	10.360145	10.037850	9.962150	30	42		
19	45	9.602077	10.397923	9.639939	10.360059	10.037864	9.962136	15	41		
20	35	9.602149	10.397851	9.640027	10.359973	10.037877	9.962123	25	40		
21	15	9.602222	10.397778	9.640113	10.359887	10.037891	9.962109	45	39		
22	30	9.602294	10.397706	9.640199	10.359801	10.037905	9.962095	30	38		
23	45	9.602366	10.397634	9.640285	10.359715	10.037919	9.962081	15	37		
24	36	9.602439	10.397561	9.640371	10.359629	10.037933	9.962067	24	36		
25	15	9.602511	10.397489	9.640457	10.359543	10.037946	9.962054	45	35		
26	30	9.602583	10.397417	9.640543	10.359457	10.037960	9.962040	30	34		
27	45	9.602656	10.397344	9.640629	10.359370	10.037974	9.962026	15	33		
28	37	9.602728	10.397272	9.640716	10.359284	10.037988	9.962012	23	32		
29	15	9.602800	10.397200	9.640802	10.359198	10.038002	9.961998	45	31		
30	30	9.602872	10.397128	9.640888	10.359112	10.038015	9.961985	30	30		
31	45	9.602944	10.397056	9.640974	10.359026	10.038029	9.961971	15	29		
32	38	9.603017	10.396983	9.641060	10.358940	10.038043	9.961957	22	28		
33	15	9.603089	10.396911	9.641146	10.358854	10.038057	9.961943	45	27		
34	30	9.603161	10.396839	9.641232	10.358768	10.038071	9.961929	30	26		
35	45	9.603233	10.396767	9.641318	10.358682	10.038085	9.961915	15	25		
36	39	9.603305	10.396695	9.641404	10.358596	10.038099	9.961901	21	24		
37	15	9.603377	10.396623	9.641489	10.358511	10.038112	9.961888	45	23		
38	30	9.603449	10.396551	9.641575	10.358425	10.038126	9.961874	30	22		
39	45	9.603521	10.396479	9.641661	10.358339	10.038140	9.961860	15	21		
40	40	9.603594	10.396406	9.641747	10.358253	10.038154	9.961846	20	20		
41	15	9.603666	10.396334	9.641833	10.358167	10.038168	9.961832	45	19		
42	30	9.603738	10.396262	9.641919	10.358081	10.038181	9.961819	30	18		
43	45	9.603810	10.396190	9.642005	10.357995	10.038195	9.961805	15	17		
44	41	9.603882	10.396118	9.642091	10.357909	10.038209	9.961791	19	16		
45	15	9.603954	10.396046	9.642177	10.357823	10.038223	9.961777	45	15		
46	30	9.604026	10.395974	9.642262	10.357737	10.038237	9.961763	30	14		
47	45	9.604098	10.395902	9.642348	10.357652	10.038251	9.961749	15	13		
48	42	9.604170	10.395830	9.642434	10.357566	10.038265	9.961735	18	12		
49	15	9.604242	10.395758	9.642520	10.357480	10.038278	9.961722	45	11		
50	30	9.604313	10.395687	9.642606	10.357394	10.038292	9.961708	30	10		
51	45	9.604385	10.395615	9.642691	10.357309	10.038306	9.961694	15	9		
52	43	9.604457	10.395543	9.642777	10.357223	10.038320	9.961680	17	8		
53	15	9.604529	10.395471	9.642863	10.357137	10.038334	9.961666	45	7		
54	30	9.604601	10.395399	9.642949	10.357051	10.038348	9.961652	30	6		
55	45	9.604673	10.395327	9.643035	10.356965	10.038362	9.961638	15	5		
56	44	9.604745	10.395255	9.643120	10.356880	10.038376	9.961624	16	4		
57	15	9.604817	10.395183	9.643206	10.356794	10.038389	9.961611	45	3		
58	30	9.604888	10.395112	9.643292	10.356708	10.038403	9.961597	30	2		
59	45	9.604960	10.395040	9.643377	10.356623	10.038417	9.961583	15	1		
60	45	9.605032	10.394968	9.643463	10.356537	10.038431	9.961569	15	0		
sec.	'	sec.	coscant.	cotangent.	tangent.	secant.	sine.	'	sec.	'	sec.
4° 25'			LOG. SINES, &c.						66 deg.		

1° 35'		LOG. SINES, &c. (L.)					23 deg.	
sec	"	sine.	cosine.	tangent.	cotangent.	secant.	cosecant.	"
0	45	9.605032	10.394968	9.643463	10.356537	10.038431	9.961569	1
1	15	9.605104	10.394896	9.643549	10.356451	10.038445	9.961555	45
2	30	9.605175	10.394825	9.643634	10.356366	10.038459	9.961541	30
3	45	9.605247	10.394753	9.643720	10.356280	10.038473	9.961527	15
4	46	9.605319	10.394681	9.643806	10.356194	10.038487	9.961513	14
5	15	9.605391	10.394609	9.643891	10.356109	10.038501	9.961499	45
6	30	9.605463	10.394538	9.643977	10.356023	10.038515	9.961485	30
7	45	9.605534	10.394466	9.644062	10.355938	10.038528	9.961472	15
8	47	9.605607	10.394394	9.644148	10.355852	10.038542	9.961458	13
9	15	9.605677	10.394323	9.644234	10.355766	10.038556	9.961444	45
10	30	9.605749	10.394251	9.644319	10.355681	10.038570	9.961430	30
11	45	9.605821	10.394179	9.644405	10.355595	10.038584	9.961416	15
12	48	9.605892	10.394108	9.644490	10.355510	10.038598	9.961402	12
13	15	9.605964	10.394036	9.644576	10.355424	10.038612	9.961388	45
14	30	9.606035	10.393965	9.644661	10.355339	10.038626	9.961374	30
15	45	9.606107	10.393893	9.644747	10.355253	10.038640	9.961360	15
16	49	9.606179	10.393821	9.644832	10.355168	10.038654	9.961346	11
17	15	9.606250	10.393750	9.644918	10.355082	10.038668	9.961332	45
18	30	9.606322	10.393678	9.645003	10.354997	10.038682	9.961318	30
19	45	9.606393	10.393607	9.645089	10.354911	10.038696	9.961304	15
20	50	9.606465	10.393535	9.645174	10.354826	10.038710	9.961290	10
21	15	9.606536	10.393464	9.645260	10.354740	10.038724	9.961276	45
22	30	9.606608	10.393392	9.645345	10.354655	10.038738	9.961262	30
23	45	9.606679	10.393321	9.645431	10.354569	10.038751	9.961249	15
24	51	9.606751	10.393249	9.645516	10.354484	10.038765	9.961235	9
25	15	9.606822	10.393178	9.645601	10.354399	10.038779	9.961221	45
26	30	9.606893	10.393107	9.645687	10.354313	10.038793	9.961207	30
27	45	9.606965	10.393035	9.645772	10.354228	10.038807	9.961193	15
28	52	9.607036	10.392964	9.645857	10.354143	10.038821	9.961179	8
29	15	9.607108	10.392892	9.645943	10.354057	10.038835	9.961165	45
30	30	9.607179	10.392821	9.646028	10.353972	10.038849	9.961151	30
31	45	9.607250	10.392750	9.646113	10.353887	10.038863	9.961137	15
32	53	9.607322	10.392678	9.646199	10.353801	10.038877	9.961123	7
33	15	9.607393	10.392607	9.646284	10.353716	10.038891	9.961109	45
34	30	9.607464	10.392536	9.646369	10.353631	10.038905	9.961095	30
35	45	9.607535	10.392465	9.646455	10.353546	10.038919	9.961081	15
36	54	9.607607	10.392393	9.646540	10.353460	10.038933	9.961067	6
37	15	9.607678	10.392322	9.646625	10.353375	10.038947	9.961053	45
38	30	9.607749	10.392251	9.646710	10.353290	10.038961	9.961039	30
39	45	9.607821	10.392179	9.646796	10.353204	10.038975	9.961025	15
40	55	9.607892	10.392108	9.646881	10.353119	10.038989	9.961011	5
41	15	9.607963	10.392037	9.646966	10.353034	10.039003	9.960997	45
42	30	9.608034	10.391966	9.647051	10.352949	10.039017	9.960983	30
43	45	9.608105	10.391895	9.647137	10.352863	10.039031	9.960969	15
44	56	9.608176	10.391824	9.647222	10.352778	10.039045	9.960955	4
45	15	9.608248	10.391752	9.647307	10.352693	10.039059	9.960941	45
46	30	9.608319	10.391681	9.647392	10.352608	10.039073	9.960927	30
47	45	9.608390	10.391610	9.647477	10.352523	10.039087	9.960913	15
48	57	9.608461	10.391539	9.647562	10.352438	10.039101	9.960899	3
49	15	9.608532	10.391468	9.647647	10.352353	10.039115	9.960885	45
50	30	9.608603	10.391397	9.647733	10.352267	10.039129	9.960871	30
51	45	9.608674	10.391326	9.647818	10.352182	10.039143	9.960857	15
52	58	9.608745	10.391255	9.647903	10.352097	10.039157	9.960843	2
53	15	9.608816	10.391184	9.647988	10.352012	10.039172	9.960829	45
54	30	9.608887	10.391113	9.648073	10.351927	10.039186	9.960815	30
55	45	9.608958	10.391042	9.648158	10.351842	10.039200	9.960801	15
56	59	9.609029	10.390971	9.648243	10.351757	10.039214	9.960786	1
57	15	9.609100	10.390900	9.648328	10.351672	10.039228	9.960772	45
58	30	9.609171	10.390829	9.648413	10.351587	10.039242	9.960758	30
59	45	9.609242	10.390758	9.648498	10.351502	10.039256	9.960744	15
60	60	9.609313	10.390687	9.648583	10.351417	10.039270	9.960730	0
sec	"	cosine.	secant	cotangent.	tangent.	cosecant.	sine.	"
4° 24'		LOG. SINES, &c.					66 deg.	

1° 36"		LOG. SINES, &c. (L.)						24 deg.		
deg.	'	sine.	coscant.	tangr.	cotangr.	secant.	cosec.	"	'	sec.
0	0	9.000313	10.300007	■.618583	10.351417	10.030270	9.960730	60		60
1	15	9.000384	10.300616	9.648668	10.351417	10.030284	9.960716	45		59
2	30	9.000455	10.301225	9.648753	10.351247	10.030298	9.960702	30		58
3	45	9.000526	10.301834	9.648838	10.351162	10.030312	■.■■■■■	15		57
4	1	9.000597	10.302443	9.648923	10.351077	10.030326	9.960674	59		56
5	15	9.000668	10.303052	■.649008	10.350992	10.030340	9.960660	45		55
6	30	9.000739	10.303661	9.649093	10.350907	10.030354	9.960646	30		54
7	45	9.000809	10.304270	9.649178	10.350822	10.030368	9.960632	15		53
8	2	9.000880	10.304879	9.649263	10.350737	10.030382	9.960618	58		52
9	15	9.000951	10.305488	9.649348	10.350652	10.030397	9.960603	45		51
10	30	9.001022	10.306097	9.649433	10.350567	10.030411	9.960589	30		50
11	45	9.001093	10.306706	9.649517	10.350483	10.030425	9.960575	15		49
12	3	9.001163	10.307315	9.649602	10.350398	10.030439	9.960561	57		48
13	15	9.001234	10.307924	9.649687	10.350313	10.030453	9.960547	45		47
14	30	9.001305	10.308533	9.649772	10.350228	10.030467	9.960533	30		46
15	45	9.001376	10.309142	9.649857	10.350143	10.030481	9.960519	15		45
16	4	9.001446	10.309751	9.649942	10.350058	10.030495	9.960505	56		44
17	15	9.001517	10.310360	9.650026	10.349974	10.030509	9.960491	45		43
18	30	9.001588	10.310969	9.650111	10.349889	10.030523	9.960477	30		42
19	45	9.001659	10.311578	9.650196	10.349804	10.030538	9.960463	15		41
20	5	9.001729	10.312187	9.650281	10.349719	10.030552	9.960448	55		40
21	15	9.001800	10.312796	9.650366	10.349634	10.030566	9.960434	45		39
22	30	9.001870	10.313405	9.650450	10.349550	10.030580	9.960420	30		38
23	45	9.001941	10.314014	9.650535	10.349465	10.030594	9.960406	15		37
24	6	9.002012	10.314623	9.650620	10.349380	10.030608	9.960392	54		36
25	15	9.002082	10.315232	9.650705	10.349295	10.030622	9.960378	45		35
26	30	9.002153	10.315841	9.650789	10.349211	10.030636	9.960364	30		34
27	45	9.002224	10.316450	9.650874	10.349126	10.030651	9.960349	15		33
28	7	9.002294	10.317059	9.650959	10.349041	10.030665	9.960335	53		32
29	15	9.002365	10.317668	9.651043	10.348957	10.030679	9.960321	45		31
30	30	9.002436	10.318277	9.651128	10.348872	10.030693	9.960307	30		30
31	45	9.002507	10.318886	9.651213	10.348787	10.030707	9.960293	15		29
32	8	9.002578	10.319495	9.651297	10.348703	10.030721	9.960279	52		28
33	15	9.002648	10.320104	9.651382	10.348618	10.030735	9.960265	45		27
34	30	9.002719	10.320713	9.651467	10.348534	10.030750	9.960250	30		26
35	45	9.002790	10.321322	9.651551	10.348449	10.030764	9.960236	15		25
36	9	9.002861	10.321931	9.651636	10.348364	10.030778	9.960222	51		24
37	15	9.002932	10.322540	9.651720	10.348280	10.030792	9.960208	45		23
38	30	9.003003	10.323149	9.651805	10.348195	10.030806	9.960194	30		22
39	45	9.003074	10.323758	9.651890	10.348110	10.030820	9.960180	15		21
40	10	9.003145	10.324367	9.651974	10.348026	10.030835	9.960165	50		20
41	15	9.003216	10.324976	9.652059	10.347941	10.030849	9.960151	45		19
42	30	9.003287	10.325585	9.652143	10.347857	10.030863	9.960137	30		18
43	45	9.003358	10.326194	9.652228	10.347772	10.030877	9.960123	15		17
44	11	9.003429	10.326803	9.652312	10.347688	10.030891	9.960109	49		16
45	15	9.003500	10.327412	9.652397	10.347603	10.030905	9.960095	45		15
46	30	9.003571	10.328021	9.652481	10.347519	10.030920	9.960080	30		14
47	45	9.003642	10.328630	9.652566	10.347434	10.030934	9.960066	15		13
48	12	9.003713	10.329239	9.652650	10.347350	10.030948	9.960052	48		12
49	15	9.003784	10.329848	9.652735	10.347266	10.030962	9.960038	45		11
50	30	9.003855	10.330457	9.652819	10.347181	10.030976	9.960024	30		10
51	45	9.003926	10.331066	9.652904	10.347096	10.030991	9.960009	15		9
52	13	9.003997	10.331675	9.652988	10.347012	10.040005	9.959995	47		8
53	15	9.004068	10.332284	9.653072	10.346928	10.040019	9.959981	45		7
54	30	9.004139	10.332893	9.653157	10.346843	10.040033	9.959967	30		6
55	45	9.004210	10.333502	9.653241	10.346759	10.040047	9.959953	15		5
56	14	9.004281	10.334111	9.653326	10.346674	10.040062	9.959938	46		4
57	15	9.004352	10.334720	9.653410	10.346590	10.040076	9.959924	45		3
58	30	9.004423	10.335329	9.653494	10.346506	10.040090	9.959910	30		2
59	45	9.004494	10.335938	9.653579	10.346421	10.040104	9.959896	15		1
60	15	9.004565	10.336547	9.653663	10.346337	10.040119	9.959881	45		0
deg.	'	sine.	coscant.	tangr.	cotangr.	secant.	cosec.	"	'	sec.
4° 23"		LOG. SINES, &c.						65 deg.		

1° 37'		LOG. SINES, &c. (1.)						24 deg.	
sec.		sine.	cosecant	tangent.	cotangent.	secant.	cosine.		sec.
0	15	9.613545	10.386455	9.653663	10.346337	10.040119	9.959881	45	60
1	15	9.613615	10.386385	9.653747	10.346253	10.040133	9.959867	45	59
2	30	9.613685	10.386315	9.653832	10.346168	10.040147	9.959853	30	58
3	45	9.613755	10.386245	9.653916	10.346084	10.040161	9.959839	15	57
4	16	9.613825	10.386175	9.654000	10.346000	10.040175	9.959825	44	56
5	15	9.613895	10.386105	9.654085	10.345915	10.040190	9.959810	45	55
6	30	9.613965	10.386035	9.654169	10.345831	10.040204	9.959796	30	54
7	45	9.614035	10.385965	9.654253	10.345747	10.040218	9.959782	15	53
8	17	9.614105	10.385895	9.654337	10.345663	10.040232	9.959768	43	52
9	15	9.614175	10.385825	9.654422	10.345578	10.040247	9.959753	45	51
10	30	9.614245	10.385755	9.654506	10.345494	10.040261	9.959739	30	50
11	45	9.614315	10.385685	9.654590	10.345410	10.040275	9.959725	15	49
12	18	9.614385	10.385615	9.654674	10.345326	10.040289	9.959711	42	48
13	15	9.614455	10.385545	9.654759	10.345241	10.040304	9.959696	45	47
14	30	9.614525	10.385475	9.654843	10.345157	10.040318	9.959682	30	46
15	45	9.614595	10.385405	9.654927	10.345073	10.040332	9.959668	15	45
16	19	9.614665	10.385335	9.655011	10.344989	10.040347	9.959653	41	44
17	15	9.614735	10.385265	9.655095	10.344905	10.040361	9.959639	45	43
18	30	9.614804	10.385196	9.655179	10.344821	10.040375	9.959625	30	42
19	45	9.614874	10.385126	9.655264	10.344736	10.040389	9.959611	15	41
20	20	9.614944	10.385056	9.655348	10.344652	10.040404	9.959596	40	40
21	15	9.615014	10.384986	9.655432	10.344568	10.040418	9.959582	45	39
22	30	9.615084	10.384916	9.655516	10.344484	10.040432	9.959568	30	38
23	45	9.615154	10.384846	9.655600	10.344400	10.040446	9.959554	15	37
24	21	9.615223	10.384777	9.655684	10.344316	10.040461	9.959539	39	36
25	15	9.615293	10.384707	9.655768	10.344232	10.040475	9.959525	45	35
26	30	9.615363	10.384637	9.655852	10.344148	10.040489	9.959511	30	34
27	45	9.615433	10.384567	9.655936	10.344064	10.040504	9.959496	15	33
28	22	9.615502	10.384498	9.656020	10.343980	10.040518	9.959482	38	32
29	15	9.615572	10.384428	9.656104	10.343896	10.040532	9.959468	45	31
30	30	9.615642	10.384358	9.656188	10.343812	10.040547	9.959453	30	30
31	45	9.615712	10.384288	9.656272	10.343728	10.040561	9.959439	15	29
32	23	9.615781	10.384219	9.656356	10.343644	10.040575	9.959425	37	28
33	15	9.615851	10.384149	9.656440	10.343560	10.040590	9.959410	45	27
34	30	9.615921	10.384079	9.656524	10.343476	10.040604	9.959396	30	26
35	45	9.615990	10.384010	9.656608	10.343392	10.040618	9.959382	15	25
36	24	9.616060	10.383940	9.656692	10.343308	10.040633	9.959367	36	24
37	15	9.616129	10.383871	9.656776	10.343224	10.040647	9.959353	45	23
38	30	9.616199	10.383801	9.656860	10.343140	10.040661	9.959339	30	22
39	45	9.616269	10.383731	9.656944	10.343056	10.040675	9.959325	15	21
40	25	9.616338	10.383662	9.657028	10.342972	10.040690	9.959310	35	20
41	15	9.616408	10.383592	9.657112	10.342888	10.040704	9.959296	45	19
42	30	9.616477	10.383523	9.657196	10.342804	10.040719	9.959281	30	18
43	45	9.616547	10.383453	9.657280	10.342720	10.040733	9.959267	15	17
44	26	9.616616	10.383384	9.657364	10.342636	10.040747	9.959253	34	16
45	15	9.616686	10.383314	9.657447	10.342553	10.040762	9.959238	45	15
46	30	9.616755	10.383245	9.657531	10.342469	10.040776	9.959224	30	14
47	45	9.616825	10.383175	9.657615	10.342385	10.040790	9.959210	15	13
48	27	9.616894	10.383106	9.657699	10.342301	10.040805	9.959195	33	12
49	15	9.616964	10.383036	9.657783	10.342217	10.040819	9.959181	45	11
50	30	9.617033	10.382967	9.657867	10.342133	10.040833	9.959167	30	10
51	45	9.617103	10.382897	9.657950	10.342050	10.040848	9.959153	15	9
52	28	9.617173	10.382828	9.658034	10.341966	10.040862	9.959138	32	8
53	15	9.617241	10.382759	9.658118	10.341882	10.040876	9.959124	45	7
54	30	9.617311	10.382689	9.658202	10.341798	10.040891	9.959109	30	6
55	45	9.617380	10.382620	9.658285	10.341715	10.040905	9.959095	15	5
56	29	9.617450	10.382550	9.658369	10.341631	10.040920	9.959080	31	4
57	15	9.617519	10.382481	9.658453	10.341547	10.040934	9.959066	45	3
58	30	9.617588	10.382412	9.658537	10.341463	10.040948	9.959052	30	2
59	45	9.617658	10.382342	9.658620	10.341380	10.040963	9.959037	15	1
60	30	9.617727	10.382273	9.658704	10.341296	10.040977	9.959023	30	0
sec.		cosine.	secant.	cotangent.	tangent.	cosecant.	sine.		sec.
4° 22'		LOG. SINES, &c.						65 deg.	

1° 35'		LOG. SINES, &c. (L.)						24 deg.	
sec.		sine.	coscant.	tangent.	cotangent.	secant.	cosec.		sec.
0	30	9.617737	10.382273	9.658704	10.341296	10.040977	9.959023	30	60
1	15	9.617796	10.382204	9.658788	10.341212	10.040992	9.959008	45	59
2	30	9.617865	10.382135	9.658871	10.341129	10.041006	9.958994	30	58
3	45	9.617935	10.382065	9.658955	10.341045	10.041020	9.958980	15	57
4	31	9.618004	10.381996	9.659039	10.340961	10.041035	9.958965	29	56
5	15	9.618073	10.381927	9.659122	10.340878	10.041049	9.958951	45	55
6	30	9.618142	10.381858	9.659206	10.340794	10.041064	9.958936	30	54
7	45	9.618212	10.381788	9.659290	10.340710	10.041078	9.958922	15	53
8	32	9.618281	10.381719	9.659373	10.340627	10.041092	9.958908	28	52
9	15	9.618350	10.381650	9.659457	10.340543	10.041107	9.958893	15	51
10	30	9.618419	10.381581	9.659540	10.340460	10.041121	9.958879	30	50
11	45	9.618488	10.381512	9.659624	10.340376	10.041136	9.958864	15	49
12	33	9.618558	10.381442	9.659708	10.340292	10.041150	9.958850	27	48
13	15	9.618627	10.381373	9.659791	10.340209	10.041164	9.958836	45	47
14	30	9.618696	10.381304	9.659875	10.340125	10.041179	9.958821	30	46
15	45	9.618765	10.381235	9.659958	10.340042	10.041193	9.958807	15	45
16	34	9.618834	10.381166	9.660042	10.339958	10.041208	9.958792	26	44
17	15	9.618903	10.381097	9.660125	10.339875	10.041222	9.958778	45	43
18	30	9.618972	10.381028	9.660209	10.339791	10.041237	9.958763	30	42
19	45	9.619041	10.380959	9.660292	10.339708	10.041251	9.958749	15	41
20	35	9.619110	10.380890	9.660376	10.339624	10.041266	9.958734	25	40
21	15	9.619179	10.380821	9.660459	10.339541	10.041280	9.958720	45	39
22	30	9.619248	10.380752	9.660543	10.339457	10.041294	9.958706	30	38
23	45	9.619317	10.380683	9.660626	10.339374	10.041309	9.958691	15	37
24	36	9.619386	10.380614	9.660710	10.339290	10.041323	9.958677	24	36
25	15	9.619455	10.380545	9.660793	10.339207	10.041338	9.958662	45	35
26	30	9.619524	10.380476	9.660877	10.339123	10.041352	9.958648	30	34
27	45	9.619593	10.380407	9.660960	10.339040	10.041367	9.958633	15	33
28	37	9.619662	10.380338	9.661043	10.338957	10.041381	9.958619	23	32
29	15	9.619731	10.380269	9.661127	10.338873	10.041396	9.958604	45	31
30	30	9.619800	10.380200	9.661210	10.338790	10.041410	9.958590	30	30
31	45	9.619869	10.380131	9.661293	10.338707	10.041425	9.958575	15	29
32	38	9.619938	10.380062	9.661377	10.338623	10.041439	9.958561	22	28
33	15	9.620007	10.379993	9.661460	10.338540	10.041454	9.958546	45	27
34	30	9.620076	10.379924	9.661544	10.338456	10.041468	9.958532	30	26
35	45	9.620144	10.379855	9.661627	10.338373	10.041483	9.958517	15	25
36	39	9.620213	10.379787	9.661710	10.338290	10.041497	9.958503	21	24
37	15	9.620282	10.379718	9.661794	10.338206	10.041512	9.958488	45	23
38	30	9.620351	10.379649	9.661877	10.338123	10.041526	9.958474	30	22
39	45	9.620420	10.379580	9.661960	10.338040	10.041541	9.958459	15	21
40	40	9.620488	10.379512	9.662043	10.337957	10.041555	9.958445	20	20
41	15	9.620557	10.379443	9.662127	10.337873	10.041570	9.958430	45	19
42	30	9.620626	10.379374	9.662210	10.337790	10.041584	9.958416	30	18
43	45	9.620695	10.379305	9.662293	10.337707	10.041599	9.958401	15	17
44	41	9.620763	10.379237	9.662376	10.337624	10.041613	9.958387	19	16
45	15	9.620832	10.379168	9.662460	10.337540	10.041628	9.958372	45	15
46	30	9.620901	10.379099	9.662543	10.337457	10.041642	9.958358	30	14
47	45	9.620969	10.379031	9.662626	10.337374	10.041657	9.958343	15	13
48	42	9.621038	10.378962	9.662709	10.337291	10.041671	9.958329	16	12
49	15	9.621107	10.378893	9.662792	10.337208	10.041686	9.958314	45	11
50	30	9.621175	10.378825	9.662876	10.337124	10.041700	9.958300	30	10
51	45	9.621244	10.378756	9.662959	10.337041	10.041715	9.958285	15	9
52	43	9.621313	10.378687	9.663042	10.336958	10.041729	9.958271	17	8
53	15	9.621381	10.378619	9.663125	10.336875	10.041744	9.958256	45	7
54	30	9.621450	10.378550	9.663208	10.336792	10.041758	9.958242	30	6
55	45	9.621518	10.378482	9.663291	10.336709	10.041773	9.958227	15	5
56	44	9.621587	10.378413	9.663374	10.336626	10.041788	9.958212	16	4
57	15	9.621656	10.378344	9.663458	10.336542	10.041802	9.958198	45	3
58	30	9.621724	10.378276	9.663541	10.336459	10.041817	9.958183	30	2
59	45	9.621793	10.378207	9.663624	10.336376	10.041831	9.958169	15	1
60	45	9.621861	10.378139	9.663707	10.336293	10.041846	9.958154	15	0
val		cosine.	secant.	tangent of	cotangent.	secant.	sine		sec
4° 21'		LOG. SINES, &c.						65 deg.	

1° 39'.			LOG. SINES, &c. (L.)						24 deg		
sec.	"	"	TIME.	coscant.	tangent.	cotangent.	secant.	sine.	"	"	sec.
0	45		9.021861	10.378130	9.663707	10.336293	10.041846	0.958154	15		60
1		15	9.021930	10.378070	9.663790	10.336210	10.041800	9.958140	45		59
2		30	9.021998	10.378002	9.663873	10.336127	10.041875	9.958125	30		58
3		45	9.022067	10.377933	9.663956	10.336044	10.041889	9.958111	15		57
4	46		9.022135	10.377865	9.664039	10.335961	10.041904	9.958096	14		56
5		15	9.022204	10.377796	9.664122	10.335878	10.041919	9.958081	45		55
6		30	9.022272	10.377728	9.664205	10.335795	10.041933	9.958067	30		54
7		45	9.022340	10.377660	9.664288	10.335712	10.041948	9.958052	15		53
8	47		9.022409	10.377591	9.664371	10.335629	10.041962	9.958038	13		52
9		15	9.022477	10.377523	9.664454	10.335546	10.041977	9.958023	45		51
10		30	9.022546	10.377454	9.664537	10.335463	10.041991	9.958009	30		50
11		45	9.022614	10.377386	9.664620	10.335380	10.042006	9.957994	15		49
12	48		9.022682	10.377318	9.664703	10.335297	10.042021	9.957979	12		48
13		15	9.022751	10.377249	9.664786	10.335214	10.042035	9.957965	45		47
14		30	9.022819	10.377181	9.664869	10.335131	10.042050	9.957950	30		46
15		45	9.022887	10.377113	9.664952	10.335048	10.042064	9.957936	15		45
16	49		9.022956	10.377044	9.665035	10.334965	10.042079	9.957921	11		44
17		15	9.023024	10.376976	9.665117	10.334883	10.042093	9.957906	45		43
18		30	9.023092	10.376908	9.665200	10.334800	10.042108	9.957892	30		42
19		45	9.023160	10.376840	9.665283	10.334717	10.042123	9.957877	15		41
20	50		9.023229	10.376771	9.665366	10.334634	10.042137	9.957863	10		40
21		15	9.023297	10.376703	9.665449	10.334551	10.042152	9.957848	45		39
22		30	9.023365	10.376635	9.665532	10.334468	10.042167	9.957833	30		38
23		45	9.023433	10.376567	9.665615	10.334385	10.042181	9.957819	15		37
24	51		9.023502	10.376498	9.665697	10.334303	10.042196	9.957804	9		36
25		15	9.023570	10.376430	9.665780	10.334220	10.042211	9.957789	45		35
26		30	9.023638	10.376362	9.665863	10.334137	10.042225	9.957775	30		34
27		45	9.023706	10.376294	9.665946	10.334054	10.042240	9.957760	15		33
28	52		9.023774	10.376226	9.666029	10.333971	10.042254	9.957746	8		32
29		15	9.023842	10.376158	9.666111	10.333889	10.042269	9.957731	45		31
30		30	9.023911	10.376089	9.666194	10.333806	10.042283	9.957716	30		30
31		45	9.023979	10.376021	9.666277	10.333723	10.042298	9.957702	15		29
32	53		9.024047	10.375953	9.666360	10.333640	10.042313	9.957687	7		28
33		15	9.024115	10.375885	9.666442	10.333557	10.042328	9.957672	45		27
34		30	9.024183	10.375817	9.666525	10.333475	10.042342	9.957658	30		26
35		45	9.024251	10.375749	9.666608	10.333392	10.042357	9.957643	15		25
36	54		9.024319	10.375681	9.666691	10.333309	10.042372	9.957628	6		24
37		15	9.024387	10.375613	9.666773	10.333227	10.042386	9.957614	45		23
38		30	9.024455	10.375545	9.666856	10.333144	10.042401	9.957600	30		22
39		45	9.024523	10.375477	9.666939	10.333061	10.042416	9.957584	15		21
40	55		9.024591	10.375409	9.667021	10.332979	10.042430	9.957570	5		20
41		15	9.024659	10.375341	9.667104	10.332896	10.042445	9.957555	45		19
42		30	9.024727	10.375273	9.667187	10.332813	10.042460	9.957540	30		18
43		45	9.024795	10.375205	9.667269	10.332731	10.042474	9.957526	15		17
44	56		9.024863	10.375137	9.667352	10.332648	10.042489	9.957511	4		16
45		15	9.024931	10.375069	9.667435	10.332565	10.042504	9.957496	45		15
46		30	9.024999	10.375001	9.667517	10.332483	10.042518	9.957482	30		14
47		45	9.025067	10.374933	9.667600	10.332400	10.042533	9.957467	15		13
48	57		9.025135	10.374865	9.667682	10.332318	10.042548	9.957452	3		12
49		15	9.025202	10.374798	9.667765	10.332235	10.042563	9.957437	45		11
50		30	9.025270	10.374730	9.667847	10.332153	10.042577	9.957423	30		10
51		45	9.025338	10.374662	9.667930	10.332070	10.042592	9.957408	15		9
52	58		9.025406	10.374594	9.668013	10.331987	10.042607	9.957393	2		8
53		15	9.025474	10.374526	9.668095	10.331905	10.042621	9.957379	45		7
54		30	9.025542	10.374458	9.668178	10.331822	10.042636	9.957364	30		6
55		45	9.025609	10.374391	9.668260	10.331740	10.042651	9.957349	15		5
56	59		9.025677	10.374323	9.668343	10.331657	10.042665	9.957335	1		4
57		15	9.025745	10.374255	9.668425	10.331575	10.042680	9.957320	45		3
58		30	9.025813	10.374187	9.668508	10.331492	10.042695	9.957305	30		2
59		45	9.025880	10.374120	9.668590	10.331410	10.042710	9.957290	15		1
60	60		9.025948	10.374052	9.668672	10.331328	10.042724	9.957276	0		0
sec.	"	"	TIME.	coscant.	tangent.	cotangent.	secant.	sine.	"	"	sec.
4° 20'.			LOG. SINES, &c.						65 deg.		

1° 40'		LOG. SINES, &c. (1.)						25 deg.	
sec.		sine.	constant.	tangent.	cotangent.	secant.	cosine	N	S
0	1	9.626044	10.374062	9.668672	10.331328	10.042724	9.957276	60	60
1	15	9.626084	10.373984	9.668755	10.331245	10.042730	9.957261	45	55
2	30	9.626151	10.373849	9.668820	10.331163	10.042754	9.957246	30	58
3	45	9.626219	10.373781	9.668902	10.331080	10.042769	9.957231	15	57
4	1	9.626287	10.373713	9.669086	10.330915	10.042798	9.957202	45	56
5	15	9.626354	10.373646	9.669167	10.330833	10.042813	9.957187	30	55
6	30	9.626422	10.373578	9.669249	10.330751	10.042827	9.957173	15	54
7	45	9.626490	10.373510	9.669332	10.330668	10.042842	9.957158	58	53
8	2	9.626557	10.373443	9.669414	10.330586	10.042857	9.957143	45	52
9	15	9.626625	10.373375	9.669497	10.330503	10.042872	9.957128	30	51
10	30	9.626692	10.373308	9.669579	10.330421	10.042887	9.957113	15	50
11	45	9.626760	10.373240	9.669661	10.330339	10.042901	9.957099	57	49
12	3	9.626828	10.373172	9.669744	10.330256	10.042916	9.957084	45	48
13	15	9.626896	10.373105	9.669826	10.330174	10.042931	9.957069	30	47
14	30	9.626963	10.373037	9.669908	10.330092	10.042946	9.957054	15	46
15	45	9.627030	10.372970	9.669991	10.330009	10.042960	9.957040	56	45
16	4	9.627098	10.372902	9.670073	10.329927	10.042975	9.957025	45	44
17	15	9.627165	10.372835	9.670155	10.329845	10.042990	9.957010	30	43
18	30	9.627233	10.372767	9.670237	10.329763	10.043005	9.956995	15	42
19	45	9.627300	10.372700	9.670320	10.329680	10.043019	9.956981	55	41
20	5	9.627368	10.372632	9.670402	10.329598	10.043034	9.956966	45	40
21	15	9.627435	10.372565	9.670484	10.329516	10.043049	9.956951	30	39
22	30	9.627503	10.372497	9.670566	10.329434	10.043064	9.956936	15	38
23	45	9.627570	10.372430	9.670649	10.329351	10.043079	9.956921	54	37
24	6	9.627637	10.372363	9.670731	10.329269	10.043093	9.956907	45	36
25	15	9.627705	10.372295	9.670813	10.329187	10.043108	9.956892	30	35
26	30	9.627772	10.372228	9.670895	10.329105	10.043123	9.956877	15	34
27	45	9.627840	10.372160	9.670977	10.329023	10.043138	9.956862	53	33
28	7	9.627907	10.372093	9.671060	10.328940	10.043153	9.956847	45	32
29	15	9.627974	10.372026	9.671142	10.328858	10.043167	9.956833	30	31
30	30	9.628042	10.371958	9.671224	10.328776	10.043182	9.956818	15	30
31	45	9.628109	10.371891	9.671306	10.328694	10.043197	9.956803	52	29
32	8	9.628176	10.371824	9.671388	10.328612	10.043212	9.956788	45	28
33	15	9.628244	10.371756	9.671470	10.328530	10.043227	9.956773	30	27
34	30	9.628311	10.371689	9.671552	10.328448	10.043242	9.956758	15	26
35	45	9.628378	10.371622	9.671634	10.328366	10.043256	9.956744	51	25
36	9	9.628445	10.371555	9.671717	10.328283	10.043271	9.956729	45	24
37	15	9.628513	10.371487	9.671799	10.328201	10.043286	9.956714	30	23
38	30	9.628580	10.371420	9.671881	10.328119	10.043301	9.956699	15	22
39	45	9.628647	10.371353	9.671963	10.328037	10.043316	9.956684	50	21
40	10	9.628714	10.371286	9.672045	10.327955	10.043331	9.956669	45	20
41	15	9.628782	10.371218	9.672127	10.327873	10.043345	9.956655	30	19
42	30	9.628849	10.371151	9.672209	10.327791	10.043360	9.956640	15	18
43	45	9.628916	10.371084	9.672291	10.327709	10.043375	9.956625	49	17
44	11	9.628983	10.371017	9.672373	10.327627	10.043390	9.956610	45	16
45	15	9.629050	10.370950	9.672455	10.327545	10.043405	9.956595	30	15
46	30	9.629117	10.370883	9.672537	10.327463	10.043420	9.956580	15	14
47	45	9.629184	10.370816	9.672619	10.327381	10.043434	9.956566	48	13
48	12	9.629252	10.370748	9.672701	10.327299	10.043449	9.956551	45	12
49	15	9.629319	10.370681	9.672783	10.327217	10.043464	9.956536	30	11
50	30	9.629386	10.370614	9.672865	10.327135	10.043479	9.956521	15	10
51	45	9.629453	10.370547	9.672947	10.327053	10.043494	9.956506	47	9
52	13	9.629520	10.370480	9.673029	10.326971	10.043509	9.956491	45	8
53	15	9.629587	10.370413	9.673111	10.326889	10.043524	9.956476	30	7
54	30	9.629654	10.370346	9.673193	10.326807	10.043539	9.956461	15	6
55	45	9.629721	10.370279	9.673274	10.326726	10.043553	9.956447	46	5
56	14	9.629788	10.370212	9.673356	10.326644	10.043568	9.956432	45	4
57	15	9.629855	10.370145	9.673438	10.326562	10.043583	9.956417	30	3
58	30	9.629922	10.370078	9.673520	10.326480	10.043598	9.956402	15	2
59	45	9.629989	10.370011	9.673602	10.326398	10.043613	9.956387	45	1
60	15								0
sec.		sine.	constant.	tangent.	cotangent.	secant.	cosine	N	S
1° 19'		LOG. SINES, &c.						64 deg.	

1° 41'		LOG. SINES, &c. (t.)						25 deg.	
sec.	"	sine.	cosine.	tangent.	cotangent.	secant.	cosec.	"	sec.
0	15	9.629989	10.370011	9.673802	10.326198	10.043613	9.956387	45	60
1	15	9.630068	10.369932	9.673884	10.326116	10.043628	9.956372	45	59
2	30	9.630123	10.369877	9.673786	10.326214	10.043643	9.956357	30	58
3	45	9.630190	10.369810	9.673847	10.326153	10.043658	9.956342	15	57
4	16	9.630257	10.369743	9.673929	10.326071	10.043673	9.956327	44	56
5	15	9.630324	10.369676	9.674011	10.325989	10.043688	9.956312	45	55
6	30	9.630391	10.369609	9.674003	10.325907	10.043702	9.956298	30	54
7	45	9.630457	10.369543	9.674173	10.325823	10.043717	9.956283	15	53
8	17	9.630524	10.369476	9.674257	10.325743	10.043732	9.956268	43	52
9	15	9.630591	10.369409	9.674338	10.325662	10.043747	9.956253	45	51
10	30	9.630658	10.369342	9.674420	10.325580	10.043762	9.956238	30	50
11	45	9.630725	10.369275	9.674502	10.325498	10.043777	9.956223	15	49
12	18	9.630792	10.369208	9.674584	10.325416	10.043792	9.956208	42	48
13	15	9.630858	10.369142	9.674665	10.325335	10.043807	9.956193	45	47
14	30	9.630925	10.369075	9.674747	10.325253	10.043822	9.956178	30	46
15	45	9.630992	10.369008	9.674829	10.325171	10.043837	9.956163	15	45
16	19	9.631059	10.368941	9.674910	10.325090	10.043852	9.956148	41	44
17	15	9.631126	10.368874	9.674992	10.325008	10.043867	9.956133	45	43
18	30	9.631192	10.368808	9.675074	10.324926	10.043882	9.956118	30	42
19	45	9.631259	10.368741	9.675156	10.324844	10.043897	9.956103	15	41
20	20	9.631326	10.368674	9.675237	10.324763	10.043911	9.956088	40	40
21	15	9.631392	10.368608	9.675319	10.324681	10.043926	9.956074	45	39
22	30	9.631458	10.368541	9.675401	10.324599	10.043941	9.956059	30	38
23	45	9.631525	10.368474	9.675482	10.324518	10.043956	9.956044	15	37
24	21	9.631593	10.368407	9.675564	10.324436	10.043971	9.956029	39	36
25	15	9.631659	10.368341	9.675645	10.324355	10.043986	9.956014	45	35
26	30	9.631726	10.368274	9.675727	10.324273	10.044001	9.955999	30	34
27	45	9.631792	10.368208	9.675809	10.324191	10.044016	9.955984	15	33
28	22	9.631859	10.368141	9.675890	10.324110	10.044031	9.955969	38	32
29	15	9.631926	10.368074	9.675972	10.324028	10.044046	9.955954	45	31
30	30	9.631992	10.368008	9.676053	10.323947	10.044061	9.955939	30	30
31	45	9.632059	10.367941	9.676135	10.323865	10.044076	9.955924	15	29
32	23	9.632125	10.367875	9.676216	10.323784	10.044091	9.955909	37	28
33	15	9.632192	10.367808	9.676298	10.323702	10.044106	9.955894	45	27
34	30	9.632259	10.367741	9.676380	10.323620	10.044121	9.955879	30	26
35	45	9.632325	10.367675	9.676461	10.323539	10.044136	9.955864	15	25
36	24	9.632392	10.367608	9.676543	10.323457	10.044151	9.955849	36	24
37	15	9.632458	10.367542	9.676624	10.323376	10.044166	9.955834	45	23
38	30	9.632525	10.367475	9.676706	10.323294	10.044181	9.955819	30	22
39	45	9.632591	10.367409	9.676787	10.323213	10.044196	9.955804	15	21
40	25	9.632658	10.367342	9.676869	10.323131	10.044211	9.955789	35	20
41	15	9.632724	10.367276	9.676950	10.323050	10.044226	9.955774	45	19
42	30	9.632790	10.367210	9.677031	10.322969	10.044241	9.955759	30	18
43	45	9.632857	10.367143	9.677113	10.322887	10.044256	9.955744	15	17
44	26	9.632923	10.367077	9.677194	10.322806	10.044271	9.955729	34	16
45	15	9.632990	10.367010	9.677276	10.322724	10.044286	9.955714	45	15
46	30	9.633056	10.366944	9.677357	10.322643	10.044301	9.955699	30	14
47	45	9.633122	10.366878	9.677439	10.322561	10.044316	9.955684	15	13
48	27	9.633189	10.366811	9.677520	10.322480	10.044331	9.955669	33	12
49	15	9.633255	10.366745	9.677601	10.322399	10.044346	9.955654	45	11
50	30	9.633322	10.366678	9.677683	10.322317	10.044361	9.955639	30	10
51	45	9.633388	10.366612	9.677764	10.322236	10.044376	9.955624	15	9
52	28	9.633454	10.366546	9.677846	10.322154	10.044391	9.955609	32	8
53	15	9.633520	10.366480	9.677927	10.322073	10.044406	9.955594	45	7
54	30	9.633587	10.366413	9.678009	10.321992	10.044421	9.955579	30	6
55	45	9.633653	10.366347	9.678090	10.321910	10.044437	9.955563	15	5
56	29	9.633719	10.366281	9.678171	10.321829	10.044452	9.955548	31	4
57	15	9.633786	10.366214	9.678252	10.321748	10.044467	9.955533	45	3
58	30	9.633852	10.366148	9.678333	10.321667	10.044482	9.955518	30	2
59	45	9.633918	10.366082	9.678415	10.321585	10.044497	9.955503	15	1
60	30	9.633984	10.366016	9.678496	10.321504	10.044512	9.955488	30	0
sec.	"	sine.	cosine.	tangent.	cotangent.	secant.	cosec.	"	sec.
4° 18'		LOG. SINES, &c.						64 deg.	

1 ^h 42 ^m .		LOG. SINES, &c. (L.)					25 deg.	
N	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
30	9.633984	10.366016	9.678496	10.321504	10.044512	9.955488	30	60
15	9.634051	10.365949	9.678577	10.321423	10.044527	9.955473	45	59
30	9.634117	10.365883	9.678659	10.321341	10.044542	9.955458	30	58
45	9.634183	10.365817	9.678740	10.321260	10.044557	9.955443	15	57
31	9.634249	10.365751	9.678821	10.321179	10.044572	9.955428	29	56
15	9.634315	10.365685	9.678902	10.321098	10.044587	9.955413	45	55
30	9.634381	10.365619	9.678984	10.321016	10.044602	9.955398	30	54
45	9.634447	10.365553	9.679065	10.320935	10.044617	9.955383	15	53
32	9.634514	10.365486	9.679146	10.320854	10.044632	9.955368	28	52
15	9.634580	10.365420	9.679227	10.320773	10.044647	9.955353	45	51
30	9.634646	10.365354	9.679308	10.320692	10.044663	9.955337	30	50
45	9.634712	10.365288	9.679390	10.320610	10.044678	9.955322	15	49
33	9.634778	10.365222	9.679471	10.320529	10.044693	9.955307	27	48
15	9.634844	10.365156	9.679552	10.320448	10.044708	9.955292	45	47
30	9.634910	10.365090	9.679633	10.320367	10.044723	9.955277	30	46
45	9.634976	10.365024	9.679714	10.320286	10.044738	9.955262	15	45
34	9.635042	10.364958	9.679795	10.320205	10.044753	9.955247	26	44
15	9.635108	10.364892	9.679876	10.320124	10.044768	9.955232	45	43
30	9.635174	10.364826	9.679958	10.320042	10.044783	9.955217	30	42
45	9.635240	10.364760	9.680039	10.319961	10.044799	9.955201	15	41
35	9.635306	10.364694	9.680120	10.319880	10.044814	9.955186	25	40
15	9.635372	10.364628	9.680201	10.319799	10.044829	9.955171	45	39
30	9.635438	10.364562	9.680282	10.319718	10.044844	9.955156	30	38
45	9.635504	10.364496	9.680363	10.319637	10.044859	9.955141	15	37
36	9.635570	10.364430	9.680444	10.319556	10.044874	9.955126	24	36
15	9.635636	10.364364	9.680525	10.319475	10.044889	9.955111	45	35
30	9.635702	10.364298	9.680606	10.319394	10.044904	9.955096	30	34
45	9.635768	10.364232	9.680687	10.319313	10.044920	9.955080	15	33
37	9.635833	10.364167	9.680768	10.319232	10.044935	9.955065	23	32
15	9.635899	10.364101	9.680849	10.319151	10.044950	9.955050	45	31
30	9.635965	10.364035	9.680930	10.319070	10.044965	9.955035	30	30
45	9.636031	10.363969	9.681011	10.318989	10.044980	9.955020	15	29
38	9.636097	10.363903	9.681092	10.318908	10.044995	9.955005	22	28
15	9.636163	10.363837	9.681173	10.318827	10.045010	9.954990	45	27
30	9.636228	10.363772	9.681254	10.318746	10.045026	9.954974	30	26
45	9.636294	10.363706	9.681335	10.318665	10.045041	9.954959	15	25
39	9.636360	10.363640	9.681416	10.318584	10.045056	9.954944	21	24
15	9.636426	10.363574	9.681497	10.318503	10.045071	9.954929	45	23
30	9.636492	10.363508	9.681578	10.318422	10.045086	9.954914	30	22
45	9.636557	10.363443	9.681659	10.318341	10.045101	9.954899	15	21
40	9.636623	10.363377	9.681740	10.318260	10.045117	9.954883	20	20
15	9.636689	10.363311	9.681820	10.318180	10.045132	9.954868	45	19
30	9.636754	10.363246	9.681901	10.318099	10.045147	9.954853	30	18
45	9.636820	10.363180	9.681982	10.318018	10.045162	9.954838	15	17
41	9.636886	10.363114	9.682063	10.317937	10.045177	9.954823	19	16
15	9.636951	10.363049	9.682144	10.317856	10.045193	9.954807	45	15
30	9.637017	10.362983	9.682225	10.317775	10.045208	9.954792	30	14
45	9.637083	10.362917	9.682306	10.317694	10.045223	9.954777	15	13
42	9.637148	10.362852	9.682386	10.317614	10.045238	9.954762	18	12
15	9.637214	10.362786	9.682467	10.317533	10.045253	9.954747	45	11
30	9.637280	10.362720	9.682548	10.317452	10.045269	9.954731	30	10
45	9.637345	10.362655	9.682629	10.317371	10.045284	9.954716	15	9
43	9.637411	10.362589	9.682710	10.317290	10.045299	9.954701	17	8
15	9.637476	10.362524	9.682790	10.317210	10.045314	9.954686	45	7
30	9.637542	10.362458	9.682871	10.317129	10.045329	9.954671	30	6
45	9.637607	10.362393	9.682952	10.317048	10.045345	9.954655	15	5
44	9.637673	10.362327	9.683033	10.316967	10.045360	9.954640	16	4
15	9.637739	10.362261	9.683114	10.316886	10.045375	9.954625	45	3
30	9.637804	10.362196	9.683194	10.316806	10.045390	9.954610	30	2
45	9.637870	10.362130	9.683275	10.316725	10.045406	9.954594	15	1
45	9.637935	10.362065	9.683356	10.316644	10.045421	9.954579	15	0
"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
4 ^h 17 ^m .		LOG. SINES, &c.					64 deg.	

1° 43'		LOG. SINES, &c. (L)						25 deg.	
sec.		sine.	coscant.	tangrnt.	cotangrnt.	secant.	cosine		sec.
0	45	9.637936	10.362065	9.683356	10.316644	10.045421	9.954579	15	■
1	15	9.638000	10.362000	9.683436	10.316564	10.045426	9.954564	■	59
2	30	9.638066	10.361934	9.683517	10.316483	10.045451	9.954549	30	58
3	45	9.638131	10.361869	9.683598	10.316402	10.045466	9.954534	15	57
4	46	9.638197	10.361803	9.683678	10.316322	10.045482	9.954518	14	56
5	15	9.638262	10.361738	9.683759	10.316241	10.045497	9.954503	45	55
6	30	9.638328	10.361672	9.683840	10.316160	10.045512	9.954488	30	54
7	45	9.638393	10.361607	9.683920	10.316080	10.045527	9.954473	15	53
8	47	9.638458	10.361542	9.684001	10.315999	10.045543	9.954457	13	52
9	15	9.638524	10.361476	9.684082	10.315918	10.045558	9.954442	45	51
10	30	9.638589	10.361411	9.684162	10.315838	10.045573	9.954427	30	50
11	45	9.638655	10.361345	9.684243	10.315757	10.045588	9.954412	■	49
12	48	9.638720	10.361280	9.684324	10.315676	10.045604	9.954396	12	48
13	15	9.638785	10.361215	9.684404	10.315596	10.045619	9.954381	45	47
14	30	9.638851	10.361149	9.684485	10.315515	10.045634	9.954366	30	46
15	45	9.638916	10.361084	9.684565	10.315436	10.045650	9.954350	15	45
16	49	9.638981	10.361019	9.684646	10.315354	10.045665	9.954335	11	44
17	15	9.639046	10.360954	9.684726	10.315274	10.045680	9.954320	45	43
18	30	9.639112	10.360888	9.684807	10.315193	10.045695	9.954305	30	42
19	45	9.639177	10.360823	9.684888	10.315112	10.045711	9.954289	15	41
20	50	9.639242	10.360758	9.684968	10.315032	10.045726	9.954274	10	40
21	15	9.639307	10.360693	9.685049	10.314951	10.045741	9.954259	45	39
22	30	9.639373	10.360627	9.685129	10.314871	10.045757	9.954243	30	38
23	45	9.639438	10.360562	9.685210	10.314790	10.045772	9.954228	15	37
24	51	9.639503	10.360497	9.685290	10.314710	10.045787	9.954213	9	36
25	15	9.639568	10.360432	9.685371	10.314629	10.045802	9.954198	45	35
26	30	9.639633	10.360367	9.685451	10.314549	10.045818	9.954182	30	34
27	45	9.639698	10.360302	9.685532	10.314468	10.045833	9.954167	15	33
28	52	9.639764	10.360236	9.685612	10.314388	10.045848	9.954152	8	32
29	15	9.639829	10.360171	9.685692	10.314308	10.045864	9.954136	■	■
30	30	9.639894	10.360106	9.685773	10.314227	10.045879	9.954121	30	30
31	45	9.639959	10.360041	9.685853	10.314147	10.045894	9.954106	15	29
32	53	9.640024	10.359976	9.685934	10.314066	10.045910	9.954090	7	28
33	15	9.640089	10.359911	9.686014	10.313986	10.045925	9.954075	45	27
34	30	9.640154	10.359846	9.686095	10.313905	10.045940	9.954060	30	26
35	45	9.640219	10.359781	9.686175	10.313825	10.045956	9.954044	15	25
36	54	9.640284	10.359716	9.686255	10.313745	10.045971	9.954029	6	24
37	15	9.640349	10.359651	9.686336	10.313664	10.045986	9.954014	45	23
38	30	9.640414	10.359586	9.686416	10.313584	10.046002	9.953998	30	22
39	45	9.640479	10.359521	9.686496	10.313504	10.046017	9.953983	15	21
40	55	9.640544	10.359456	9.686577	10.313423	10.046032	9.953968	5	20
41	15	9.640609	10.359391	9.686657	10.313343	10.046048	9.953952	45	19
42	30	9.640674	10.359326	9.686737	10.313263	10.046063	9.953937	30	18
43	45	9.640739	10.359261	9.686818	10.313182	10.046078	9.953922	15	17
44	56	9.640804	10.359196	9.686898	10.313102	10.046094	9.953906	4	16
45	15	9.640869	10.359131	9.686978	10.313022	10.046109	9.953891	45	15
46	30	9.640934	10.359066	9.687059	10.312941	10.046124	9.953876	30	14
47	45	9.640999	10.359001	9.687139	10.312861	10.046140	9.953860	■	13
■	57	9.641064	10.358936	9.687219	10.312781	10.046155	9.953845	3	12
49	15	9.641129	10.358871	9.687299	10.312701	10.046171	9.953829	45	11
50	30	9.641194	10.358806	9.687380	10.312620	10.046186	9.953814	■	10
51	45	9.641259	10.358741	9.687460	10.312540	10.046201	9.953799	15	9
52	58	9.641323	10.358677	9.687540	10.312460	10.046217	9.953783	2	8
53	15	9.641388	10.358612	9.687620	10.312380	10.046232	9.953768	45	7
54	30	9.641453	10.358547	9.687701	10.312299	10.046247	9.953753	30	6
55	45	9.641518	10.358482	9.687781	10.312219	10.046263	9.953737	15	5
56	59	9.641583	10.358417	9.687861	10.312139	10.046278	9.953722	1	4
57	15	9.641648	10.358352	9.687941	10.312059	10.046294	9.953706	45	3
58	30	9.641712	10.358288	9.688021	10.311979	10.046309	9.953691	30	2
59	45	9.641777	10.358223	9.688102	10.311898	10.046324	9.953676	15	1
60	60	9.641842	10.358158	9.688182	10.311818	10.046340	9.953660	0	0
sec.		cosine.	secant.	cotangrnt.	tangrnt.	coscant.	sine.		sec.
4° 16'		LOG. SINES, &c.						64 deg.	

1 st 44 ^m .		LOG. SINES, &c. (L.)					26 deg.	
	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	9.641842	10.358158	9.688182	10.311818	10.046340	9.953600	60	60
15	9.641907	10.358093	9.688262	10.311738	10.046355	9.953645	45	59
30	9.641971	10.358029	9.688342	10.311658	10.046371	9.953629	30	58
45	9.642036	10.357964	9.688422	10.311578	10.046386	9.953614	15	57
1	9.642101	10.357899	9.688502	10.311498	10.046402	9.953598	59	56
15	9.642166	10.357834	9.688582	10.311418	10.046417	9.953583	45	55
30	9.642230	10.357770	9.688663	10.311337	10.046432	9.953568	30	54
45	9.642295	10.357705	9.688743	10.311257	10.046448	9.953552	15	53
2	9.642360	10.357640	9.688823	10.311177	10.046463	9.953537	58	52
15	9.642424	10.357576	9.688903	10.311097	10.046479	9.953521	45	51
30	9.642489	10.357511	9.688983	10.311017	10.046494	9.953506	30	50
45	9.642553	10.357447	9.689063	10.310937	10.046509	9.953491	15	49
3	9.642618	10.357382	9.689143	10.310857	10.046525	9.953475	57	48
15	9.642683	10.357317	9.689223	10.310777	10.046540	9.953460	45	47
30	9.642747	10.357253	9.689303	10.310697	10.046556	9.953444	30	46
45	9.642812	10.357188	9.689383	10.310617	10.046571	9.953429	15	45
4	9.642876	10.357124	9.689463	10.310537	10.046587	9.953413	56	44
15	9.642941	10.357059	9.689543	10.310457	10.046602	9.953398	45	43
30	9.643006	10.356994	9.689623	10.310377	10.046618	9.953382	30	42
45	9.643070	10.356930	9.689703	10.310297	10.046633	9.953367	15	41
5	9.643135	10.356865	9.689783	10.310217	10.046649	9.953351	55	40
15	9.643199	10.356801	9.689863	10.310137	10.046664	9.953336	45	39
30	9.643264	10.356736	9.689943	10.310057	10.046679	9.953321	30	38
45	9.643328	10.356672	9.690023	10.309977	10.046695	9.953305	15	37
6	9.643393	10.356607	9.690103	10.309897	10.046710	9.953290	54	36
15	9.643457	10.356543	9.690183	10.309817	10.046726	9.953274	45	35
30	9.643521	10.356479	9.690263	10.309737	10.046741	9.953259	30	34
45	9.643586	10.356414	9.690343	10.309657	10.046757	9.953243	15	33
7	9.643650	10.356350	9.690423	10.309577	10.046772	9.953228	53	32
15	9.643715	10.356285	9.690502	10.309498	10.046788	9.953212	45	31
30	9.643779	10.356221	9.690582	10.309418	10.046803	9.953197	30	30
45	9.643844	10.356156	9.690662	10.309338	10.046819	9.953181	15	29
8	9.643908	10.356092	9.690742	10.309258	10.046834	9.953166	52	28
15	9.643972	10.356028	9.690822	10.309178	10.046850	9.953150	45	27
30	9.644037	10.355963	9.690902	10.309098	10.046865	9.953135	30	26
45	9.644101	10.355899	9.690982	10.309018	10.046881	9.953119	15	25
9	9.644165	10.355835	9.691062	10.308938	10.046896	9.953104	51	24
15	9.644230	10.355770	9.691141	10.308859	10.046912	9.953088	45	23
30	9.644294	10.355706	9.691221	10.308779	10.046927	9.953073	30	22
45	9.644358	10.355642	9.691301	10.308699	10.046943	9.953057	15	21
10	9.644423	10.355577	9.691381	10.308619	10.046958	9.953042	50	20
15	9.644487	10.355513	9.691461	10.308539	10.046974	9.953026	45	19
30	9.644551	10.355449	9.691540	10.308460	10.046989	9.953011	30	18
45	9.644615	10.355385	9.691620	10.308380	10.047005	9.952995	15	17
11	9.644680	10.355320	9.691700	10.308300	10.047020	9.952980	49	16
15	9.644744	10.355256	9.691780	10.308220	10.047036	9.952964	45	15
30	9.644808	10.355192	9.691859	10.308141	10.047051	9.952949	30	14
45	9.644872	10.355128	9.691939	10.308061	10.047067	9.952933	15	13
12	9.644936	10.355064	9.692019	10.307981	10.047083	9.952917	48	12
15	9.645001	10.354999	9.692099	10.307901	10.047098	9.952902	45	11
30	9.645065	10.354935	9.692178	10.307822	10.047114	9.952886	30	10
45	9.645129	10.354871	9.692258	10.307742	10.047129	9.952871	15	9
13	9.645193	10.354807	9.692338	10.307662	10.047145	9.952855	47	8
15	9.645257	10.354743	9.692417	10.307583	10.047160	9.952840	45	7
30	9.645321	10.354679	9.692497	10.307503	10.047176	9.952824	30	6
45	9.645385	10.354615	9.692577	10.307423	10.047191	9.952809	15	5
14	9.645450	10.354550	9.692656	10.307344	10.047207	9.952793	46	4
15	9.645514	10.354486	9.692736	10.307264	10.047223	9.952777	45	3
30	9.645578	10.354422	9.692816	10.307184	10.047238	9.952762	30	2
45	9.645642	10.354358	9.692895	10.307105	10.047254	9.952746	15	1
15	9.645706	10.354294	9.692975	10.307025	10.047269	9.952731	45	0
	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
4 th 15 ^m .		LOG. SINES, &c.					63 deg.	

1° 45'.		LOG. SINES, &c. (1.)						26 deg.	
sec.	min.	sine	cos-e-ant.	tangent	cotang-e-ni	secant	cosec.	sec.	min.
0	15	9.643796	10.354294	9.002975	10.307025	III. 047300	9.952731	45	60
1	15	9.643779	10.354220	9.003055	10.306945	III. 047285	9.952715	45	59
2	30	9.643834	10.354166	9.003134	10.306866	10.047300	9.952700	30	58
3	45	9.643890	III. 354102	9.003214	10.306786	10.047316	9.952684	15	57
4	16	9.643963	10.354037	9.003293	10.306707	10.047332	9.952668	44	56
5	15	9.644026	10.353974	9.003373	10.306627	10.047347	9.952653	45	55
6	30	9.644090	10.353910	9.003453	10.306547	10.047363	9.952637	30	54
7	45	9.644154	10.353846	9.003532	10.306468	10.047378	9.952622	15	53
8	17	9.644218	10.353782	9.003612	10.306388	10.047394	9.952606	43	52
9	15	9.644282	10.353718	9.003691	10.306309	10.047410	9.952590	III	51
10	30	9.644346	10.353654	9.003771	10.306229	10.047425	9.952575	30	50
11	45	9.644410	10.353590	9.003850	10.306150	10.047441	9.952559	15	49
12	18	9.644473	10.353527	9.003930	10.306070	10.047456	9.952544	42	48
13	15	9.644537	10.353463	9.004009	10.305991	10.047472	9.952528	45	47
14	30	9.644601	10.353399	9.004089	10.305911	10.047488	9.952512	30	46
15	45	9.644665	10.353335	9.004168	10.305832	10.047503	9.952497	15	45
16	19	9.644729	10.353271	9.004248	10.305752	10.047519	9.952481	41	44
17	15	9.644793	10.353207	9.004327	10.305673	10.047534	9.952466	45	43
18	30	9.644857	10.353143	9.004407	10.305593	10.047550	9.952450	30	42
19	45	9.644920	10.353080	9.004486	10.305514	10.047566	9.952434	15	41
20	20	9.644984	10.353016	9.004566	10.305434	10.047581	9.952419	40	40
21	15	9.645048	10.352952	9.004645	10.305355	10.047597	9.952403	45	39
22	30	9.645112	10.352888	9.004724	10.305276	10.047613	9.952387	30	38
23	45	9.645176	10.352824	9.004804	10.305196	10.047628	9.952372	15	37
24	21	9.645239	10.352761	9.004883	10.305117	10.047644	9.952356	39	36
25	15	9.645303	10.352697	9.004963	10.305037	10.047659	9.952341	45	35
26	30	9.645367	10.352633	9.005042	10.304958	10.047675	9.952325	30	34
27	45	9.645431	10.352569	9.005121	10.304879	10.047691	9.952309	15	33
28	22	9.645494	10.352506	9.005201	III. 304799	10.047706	9.952294	36	32
29	15	9.645558	10.352442	9.005280	III. 304720	10.047722	9.952278	45	31
30	30	9.645622	10.352378	9.005360	10.304640	10.047738	9.952262	III	30
31	45	9.645686	10.352314	9.005439	10.304561	10.047753	9.952247	15	29
32	23	9.645749	10.352251	9.005518	10.304482	10.047769	9.952231	37	28
33	15	9.645813	10.352187	9.005598	10.304402	10.047785	9.952215	45	27
34	30	9.645877	10.352123	9.005677	10.304323	10.047800	9.952200	30	26
35	45	9.645940	10.352060	9.005756	10.304244	10.047816	9.952184	15	25
36	24	9.646004	10.351996	9.005835	10.304165	10.047832	9.952168	36	24
37	15	9.646067	10.351933	9.005915	10.304085	III. 047847	9.952153	45	23
38	30	9.646131	10.351869	9.005994	10.304006	10.047863	9.952137	III	22
39	45	9.646195	10.351805	9.006073	10.303927	10.047879	9.952121	15	21
40	25	9.646258	10.351742	9.006153	10.303847	10.047895	9.952105	35	20
41	15	9.646322	10.351678	9.006232	10.303768	10.047910	9.952090	45	19
42	30	9.646385	10.351615	9.006311	10.303689	10.047926	9.952074	III	18
43	45	9.646448	10.351551	9.006390	10.303610	10.047942	9.952058	15	17
44	26	9.646512	10.351488	9.006470	10.303530	10.047957	9.952043	34	16
45	15	9.646576	10.351424	9.006549	10.303451	10.047973	9.952027	45	15
46	30	9.646639	10.351361	9.006628	10.303372	10.047989	9.952011	30	14
47	45	9.646703	10.351297	9.006707	10.303293	10.048004	9.951996	15	13
48	27	9.646766	10.351234	9.006786	10.303214	10.048020	9.951980	33	12
49	15	9.646830	10.351170	9.006866	10.303134	10.048036	9.951964	45	11
50	30	9.646893	10.351107	9.006945	10.303055	10.048052	9.951948	30	10
51	45	9.646957	10.351043	9.007024	10.302976	10.048067	9.951933	15	9
52	28	9.647020	10.350980	9.007103	10.302897	10.048083	9.951917	32	8
53	15	9.647084	10.350916	9.007182	10.302818	10.048099	9.951901	45	7
54	30	9.647147	10.350853	9.007261	10.302739	10.048114	9.951886	30	6
55	45	9.647211	10.350789	9.007341	III. 302659	10.048130	9.951870	15	5
56	29	9.647274	III. 350726	9.007420	10.302580	10.048146	9.951854	31	4
57	15	9.647337	10.350663	9.007499	10.302501	10.048162	9.951838	45	3
58	30	9.647401	10.350599	9.007578	10.302422	10.048177	9.951823	30	2
59	45	9.647464	10.350536	9.007657	10.302343	10.048193	9.951807	15	1
60	30	9.647527	10.350473	9.007736	10.302264	10.048209	9.951791	30	0
sec.	min.	sine	cos-e-ant.	tangent	cotang-e-ni	secant	cosec.	sec.	min.
1° 14'.		LOG. SINES, &c.						63 deg.	

1 ^h 46 ^m .		LOG. SINES, &c. (t.)				26 deg.		
	sine.	cosecant.	tangent.	cotangent.	secant.	crsine.		sec.
30	9.649527	10.350473	9.697736	10.302264	10.048209	9.951791	30	60
15	9.649591	10.350409	9.697815	10.302185	10.048225	9.951775	45	59
30	9.649654	10.350346	9.697894	10.302106	10.048240	9.951760	30	58
45	9.649717	10.350283	9.697973	10.302027	10.048256	9.951744	15	57
31	9.649781	10.350219	9.698053	10.301947	10.048272	9.951728	29	56
15	9.649844	10.350156	9.698132	10.301868	10.048288	9.951712	45	55
30	9.649907	10.350093	9.698211	10.301789	10.048303	9.951697	30	54
45	9.649971	10.350029	9.698290	10.301710	10.048319	9.951681	15	53
32	9.650034	10.349966	9.698369	10.301631	10.048335	9.951665	28	52
15	9.650097	10.349903	9.698448	10.301552	10.048351	9.951649	45	51
30	9.650160	10.349840	9.698527	10.301473	10.048366	9.951634	30	50
45	9.650223	10.349777	9.698606	10.301394	10.048382	9.951618	15	49
33	9.650287	10.349713	9.698685	10.301315	10.048398	9.951602	27	48
15	9.650350	10.349650	9.698764	10.301236	10.048414	9.951586	45	47
30	9.650413	10.349587	9.698843	10.301157	10.048430	9.951570	30	46
45	9.650476	10.349524	9.698922	10.301078	10.048445	9.951555	15	45
34	9.650539	10.349461	9.699001	10.300999	10.048461	9.951539	26	44
15	9.650603	10.349397	9.699080	10.300920	10.048477	9.951523	45	43
30	9.650666	10.349334	9.699158	10.300842	10.048493	9.951507	30	42
45	9.650729	10.349271	9.699237	10.300763	10.048509	9.951491	15	41
35	9.650792	10.349208	9.699316	10.300684	10.048524	9.951476	25	40
15	9.650855	10.349145	9.699395	10.300605	10.048540	9.951460	45	39
30	9.650918	10.349082	9.699474	10.300526	10.048556	9.951444	30	38
45	9.650981	10.349019	9.699553	10.300447	10.048572	9.951428	15	37
36	9.651044	10.348956	9.699632	10.300368	10.048588	9.951412	24	36
15	9.651107	10.348893	9.699711	10.300289	10.048603	9.951397	45	35
30	9.651170	10.348830	9.699790	10.300210	10.048619	9.951381	30	34
45	9.651234	10.348766	9.699869	10.300131	10.048635	9.951365	15	33
37	9.651297	10.348703	9.699947	10.300053	10.048651	9.951349	23	32
15	9.651360	10.348640	9.700026	10.299974	10.048667	9.951333	45	31
30	9.651423	10.348577	9.700105	10.299895	10.048683	9.951317	30	30
45	9.651486	10.348514	9.700184	10.299816	10.048698	9.951302	15	29
38	9.651549	10.348451	9.700263	10.299737	10.048714	9.951286	22	28
15	9.651612	10.348388	9.700342	10.299658	10.048730	9.951270	45	27
30	9.651674	10.348326	9.700420	10.299580	10.048746	9.951254	30	26
45	9.651737	10.348263	9.700499	10.299501	10.048762	9.951238	15	25
39	9.651800	10.348200	9.700578	10.299422	10.048778	9.951222	21	24
15	9.651863	10.348137	9.700657	10.299343	10.048793	9.951207	45	23
30	9.651926	10.348074	9.700735	10.299265	10.048809	9.951191	30	22
45	9.651989	10.348011	9.700814	10.299186	10.048825	9.951175	15	21
40	9.652052	10.347948	9.700893	10.299107	10.048841	9.951159	20	20
15	9.652115	10.347885	9.700972	10.299028	10.048857	9.951143	45	19
30	9.652178	10.347822	9.701050	10.298950	10.048873	9.951127	30	18
45	9.652241	10.347759	9.701129	10.298871	10.048889	9.951111	15	17
41	9.652303	10.347697	9.701208	10.298792	10.048904	9.951096	19	16
15	9.652366	10.347634	9.701287	10.298713	10.048920	9.951080	45	15
30	9.652429	10.347571	9.701365	10.298635	10.048936	9.951064	30	14
45	9.652492	10.347508	9.701444	10.298556	10.048952	9.951048	15	13
42	9.652555	10.347445	9.701523	10.298477	10.048968	9.951032	18	12
15	9.652618	10.347382	9.701601	10.298399	10.048984	9.951016	45	11
30	9.652680	10.347320	9.701680	10.298320	10.049000	9.951000	30	10
45	9.652743	10.347257	9.701759	10.298241	10.049016	9.950984	15	9
43	9.652806	10.347194	9.701837	10.298163	10.049032	9.950968	17	8
15	9.652869	10.347131	9.701916	10.298084	10.049047	9.950953	45	7
30	9.652931	10.347069	9.701995	10.298005	10.049063	9.950937	30	6
45	9.652994	10.347006	9.702073	10.297927	10.049079	9.950921	15	5
44	9.653057	10.346943	9.702152	10.297848	10.049095	9.950905	16	4
15	9.653119	10.346881	9.702230	10.297770	10.049111	9.950889	45	3
30	9.653182	10.346818	9.702309	10.297691	10.049127	9.950873	30	2
45	9.653245	10.346755	9.702388	10.297612	10.049143	9.950857	15	1
45	9.653307	10.346693	9.702466	10.297534	10.049159	9.950841	15	0
	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
4 ^h 13 ^m .		LOG. SINES, &c.				63 deg.		

LOG. SINES, &c. (t.)									
1 ^h 47 ^m .								26 deg	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	45	9.653307	10.346693	9.702466	10.297534	10.049159	9.950841	15	60
1	15	9.653370	10.346630	9.702545	10.297455	10.049175	9.950825	45	59
2	30	9.653433	10.346567	9.702623	10.297377	10.049191	9.950809	30	58
3	45	9.653495	10.346505	9.702702	10.297298	10.049207	9.950793	15	57
4	46	9.653558	10.346442	9.702780	10.297220	10.049223	9.950777	14	56
5	15	9.653621	10.346379	9.702859	10.297141	10.049238	9.950762	45	55
6	30	9.653683	10.346317	9.702938	10.297062	10.049254	9.950746	30	54
7	45	9.653746	10.346254	9.703016	10.296984	10.049270	9.950730	15	53
8	47	9.653808	10.346192	9.703095	10.296905	10.049286	9.950714	13	52
9	15	9.653871	10.346129	9.703173	10.296827	10.049302	9.950698	45	51
10	30	9.653933	10.346067	9.703252	10.296748	10.049318	9.950682	30	50
11	45	9.653996	10.346004	9.703330	10.296670	10.049334	9.950666	15	49
12	48	9.654059	10.345941	9.703409	10.296591	10.049350	9.950650	12	48
13	15	9.654121	10.345879	9.703487	10.296513	10.049366	9.950634	45	47
14	30	9.654184	10.345816	9.703566	10.296434	10.049382	9.950618	30	46
15	45	9.654246	10.345754	9.703644	10.296356	10.049398	9.950602	15	45
16	49	9.654309	10.345691	9.703722	10.296278	10.049414	9.950586	11	44
17	15	9.654371	10.345629	9.703801	10.296199	10.049430	9.950570	45	43
18	30	9.654433	10.345567	9.703879	10.296121	10.049446	9.950554	30	42
19	45	9.654496	10.345504	9.703958	10.296042	10.049462	9.950538	15	41
20	50	9.654558	10.345442	9.704036	10.295964	10.049478	9.950522	10	40
21	15	9.654621	10.345379	9.704115	10.295885	10.049494	9.950506	45	39
22	30	9.654683	10.345317	9.704193	10.295807	10.049510	9.950490	30	38
23	45	9.654746	10.345254	9.704271	10.295729	10.049526	9.950474	15	37
24	51	9.654808	10.345192	9.704350	10.295650	10.049542	9.950458	9	36
25	15	9.654870	10.345130	9.704428	10.295572	10.049558	9.950442	45	35
26	30	9.654933	10.345067	9.704506	10.295494	10.049574	9.950426	30	34
27	45	9.654995	10.345005	9.704585	10.295415	10.049590	9.950410	15	33
28	52	9.655057	10.344943	9.704663	10.295337	10.049606	9.950394	8	32
29	15	9.655120	10.344880	9.704741	10.295259	10.049622	9.950378	45	31
30	30	9.655182	10.344818	9.704820	10.295180	10.049638	9.950362	30	30
31	45	9.655244	10.344756	9.704898	10.295102	10.049654	9.950346	15	29
32	53	9.655307	10.344693	9.704976	10.295024	10.049670	9.950330	7	28
33	15	9.655369	10.344631	9.705055	10.294945	10.049686	9.950314	45	27
34	30	9.655431	10.344569	9.705133	10.294867	10.049702	9.950298	30	26
35	45	9.655494	10.344506	9.705211	10.294789	10.049718	9.950282	15	25
36	54	9.655556	10.344444	9.705290	10.294710	10.049734	9.950266	6	24
37	15	9.655618	10.344382	9.705368	10.294632	10.049750	9.950250	45	23
38	30	9.655680	10.344320	9.705446	10.294554	10.049766	9.950234	30	22
39	45	9.655743	10.344257	9.705524	10.294476	10.049782	9.950218	15	21
40	55	9.655805	10.344195	9.705603	10.294397	10.049798	9.950202	5	20
41	15	9.655867	10.344133	9.705681	10.294319	10.049814	9.950186	45	19
42	30	9.655929	10.344071	9.705759	10.294241	10.049830	9.950170	30	18
43	45	9.655991	10.344009	9.705837	10.294163	10.049846	9.950154	15	17
44	56	9.656054	10.343946	9.705916	10.294084	10.049862	9.950138	4	16
45	15	9.656116	10.343884	9.705994	10.294006	10.049878	9.950122	45	15
46	30	9.656178	10.343822	9.706072	10.293928	10.049894	9.950106	30	14
47	45	9.656240	10.343760	9.706150	10.293850	10.049910	9.950090	15	13
48	57	9.656302	10.343698	9.706228	10.293772	10.049926	9.950074	3	12
49	15	9.656364	10.343636	9.706306	10.293694	10.049942	9.950058	45	11
50	30	9.656426	10.343574	9.706385	10.293615	10.049958	9.950042	30	10
51	45	9.656488	10.343512	9.706463	10.293537	10.049974	9.950026	15	9
52	58	9.656550	10.343450	9.706541	10.293459	10.049991	9.950009	2	8
53	15	9.656613	10.343387	9.706619	10.293381	10.050007	9.949993	45	7
54	30	9.656675	10.343325	9.706697	10.293303	10.050023	9.949977	30	6
55	45	9.656737	10.343263	9.706775	10.293225	10.050039	9.949961	15	5
56	59	9.656799	10.343201	9.706853	10.293147	10.050055	9.949945	1	4
57	15	9.656861	10.343139	9.706932	10.293068	10.050071	9.949929	45	3
58	30	9.656923	10.343077	9.707010	10.292990	10.050087	9.949913	30	2
59	45	9.656985	10.343015	9.707088	10.292912	10.050103	9.949897	15	1
60	60	9.657047	10.342953	9.707166	10.292834	10.050119	9.949881	0	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
4 ^h 12 ^m .		LOG. SINES, &c.						63 deg.	

1° 48'.		LOG. SINES, &c. (t.)				27 deg.			
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	0	9.657047	10.342953	9.707166	10.292834	10.050119	9.949881	60	60
1	15	9.657109	10.342891	9.707244	10.292756	10.050135	9.949865	45	59
2	30	9.657171	10.342829	9.707322	10.292678	10.050151	9.949849	30	58
3	45	9.657233	10.342767	9.707400	10.292600	10.050167	9.949833	15	57
4	1	9.657295	10.342705	9.707478	10.292522	10.050184	9.949816	59	56
5	15	9.657356	10.342644	9.707556	10.292444	10.050200	9.949800	45	55
6	30	9.657418	10.342582	9.707634	10.292366	10.050216	9.949784	30	54
7	45	9.657480	10.342520	9.707712	10.292288	10.050232	9.949768	15	53
8	2	9.657542	10.342458	9.707790	10.292210	10.050248	9.949752	58	52
9	15	9.657604	10.342396	9.707868	10.292132	10.050264	9.949736	45	51
10	30	9.657666	10.342334	9.707946	10.292054	10.050280	9.949720	30	50
11	45	9.657728	10.342272	9.708024	10.291976	10.050296	9.949704	15	49
12	3	9.657790	10.342210	9.708102	10.291898	10.050312	9.949688	57	48
13	15	9.657852	10.342148	9.708180	10.291820	10.050329	9.949671	45	47
14	30	9.657913	10.342087	9.708258	10.291742	10.050345	9.949655	30	46
15	45	9.657975	10.342025	9.708336	10.291664	10.050361	9.949639	15	45
16	4	9.658037	10.341963	9.708414	10.291586	10.050377	9.949623	56	44
17	15	9.658099	10.341901	9.708492	10.291508	10.050393	9.949607	45	43
18	30	9.658161	10.341839	9.708570	10.291430	10.050409	9.949591	30	42
19	45	9.658222	10.341778	9.708648	10.291352	10.050425	9.949575	15	41
20	5	9.658284	10.341716	9.708726	10.291274	10.050442	9.949558	55	40
21	15	9.658346	10.341654	9.708804	10.291196	10.050458	9.949542	45	39
22	30	9.658408	10.341592	9.708882	10.291118	10.050474	9.949526	30	38
23	45	9.658469	10.341531	9.708959	10.291041	10.050490	9.949510	15	37
24	6	9.658531	10.341469	9.709037	10.290963	10.050506	9.949494	54	36
25	15	9.658593	10.341407	9.709115	10.290885	10.050522	9.949478	45	35
26	30	9.658655	10.341345	9.709193	10.290807	10.050539	9.949461	30	34
27	45	9.658716	10.341284	9.709271	10.290729	10.050555	9.949445	15	33
28	7	9.658778	10.341222	9.709349	10.290651	10.050571	9.949429	53	32
29	15	9.658840	10.341160	9.709427	10.290573	10.050587	9.949413	45	31
30	30	9.658901	10.341099	9.709504	10.290496	10.050603	9.949397	30	30
31	45	9.658963	10.341037	9.709582	10.290418	10.050619	9.949381	15	29
32	8	9.659025	10.340975	9.709660	10.290340	10.050636	9.949364	52	28
33	15	9.659086	10.340914	9.709738	10.290262	10.050652	9.949348	45	27
34	30	9.659148	10.340852	9.709816	10.290184	10.050668	9.949332	30	26
35	45	9.659209	10.340791	9.709893	10.290107	10.050684	9.949316	15	25
36	9	9.659271	10.340729	9.709971	10.290029	10.050700	9.949300	51	24
37	15	9.659333	10.340667	9.710049	10.289951	10.050717	9.949283	45	23
38	30	9.659394	10.340606	9.710127	10.289873	10.050733	9.949267	30	22
39	45	9.659456	10.340544	9.710205	10.289795	10.050749	9.949251	15	21
40	10	9.659517	10.340483	9.710282	10.289718	10.050765	9.949235	50	20
41	15	9.659579	10.340421	9.710360	10.289640	10.050781	9.949219	45	19
42	30	9.659640	10.340360	9.710438	10.289562	10.050798	9.949202	30	18
43	45	9.659702	10.340298	9.710516	10.289484	10.050814	9.949186	15	17
44	11	9.659763	10.340237	9.710593	10.289407	10.050830	9.949170	49	16
45	15	9.659825	10.340175	9.710671	10.289329	10.050846	9.949154	45	15
46	30	9.659886	10.340114	9.710749	10.289251	10.050862	9.949138	30	14
47	45	9.659948	10.340052	9.710826	10.289174	10.050879	9.949121	15	13
48	12	9.660009	10.339991	9.710904	10.289096	10.050895	9.949105	48	12
49	15	9.660071	10.339929	9.710982	10.289018	10.050911	9.949089	45	11
50	30	9.660132	10.339868	9.711059	10.288941	10.050927	9.949073	30	10
51	45	9.660194	10.339806	9.711137	10.288863	10.050944	9.949056	15	9
52	13	9.660255	10.339745	9.711215	10.288785	10.050960	9.949040	47	8
53	15	9.660316	10.339684	9.711292	10.288708	10.050976	9.949024	45	7
54	30	9.660378	10.339622	9.711370	10.288630	10.050992	9.949008	30	6
55	45	9.660439	10.339561	9.711448	10.288552	10.051009	9.948991	15	5
56	14	9.660500	10.339500	9.711525	10.288475	10.051025	9.948975	46	4
57	15	9.660562	10.339438	9.711603	10.288397	10.051041	9.948959	45	3
58	30	9.660623	10.339377	9.711681	10.288319	10.051057	9.948943	30	2
59	45	9.660685	10.339315	9.711758	10.288242	10.051074	9.948926	15	1
60	15	9.660746	10.339254	9.711836	10.288164	10.051090	9.948910	45	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
4° 11'.		LOG. SINES, &c.				62 deg.			

1° 49'		LOG. SINES, &c. (1.)						27 deg.	
deg.	min.	sine.	coscant.	tangent.	cotangent.	secant.	cosine.	sec.	deg.
0	15	9.600746	10.339254	9.711830	10.288164	10.061090	9.948910	45	60
1	15	9.600807	10.339193	9.711913	10.288087	10.051106	9.948894	45	59
2	30	9.600868	10.339132	9.711991	10.288009	10.051122	9.948878	30	58
3	45	9.600930	10.339070	9.712068	10.287932	10.051139	9.948861	15	57
4	16	9.600991	10.339009	9.712146	10.287854	10.051155	9.948845	44	56
5	15	9.601052	10.338948	9.712224	10.287776	10.051171	9.948829	45	55
6	30	9.601114	10.338886	9.712301	10.287699	10.051188	9.948812	30	54
7	45	9.601175	10.338825	9.712379	10.287621	10.051204	9.948796	15	53
8	17	9.601236	10.338764	9.712456	10.287544	10.051220	9.948780	43	52
9	15	9.601297	10.338703	9.712534	10.287466	10.051236	9.948764	45	51
10	■	9.601359	10.338641	9.712611	10.287389	10.051253	9.948747	30	50
11	45	9.601420	10.338580	9.712689	10.287311	10.051269	9.948731	15	49
12	18	9.601481	10.338519	9.712766	10.287234	10.051285	9.948715	42	48
13	15	9.601542	10.338458	9.712844	10.287156	10.051302	9.948698	45	47
14	30	9.601603	10.338397	9.712921	10.287079	10.051318	9.948682	30	46
15	45	9.601664	10.338336	9.712999	10.287001	10.051334	9.948666	15	45
16	19	9.601725	10.338274	9.713076	10.286924	10.051351	9.948649	41	44
17	15	9.601787	10.338213	9.713154	10.286846	10.051367	9.948633	45	43
18	30	9.601848	10.338152	9.713231	10.286769	10.051383	9.948617	30	42
19	45	9.601909	10.338091	9.713308	10.286692	10.051399	9.948601	15	41
20	20	9.601970	10.338030	9.713386	10.286614	10.051416	9.948585	40	40
21	15	9.602031	10.337969	9.713463	10.286537	10.051432	9.948568	45	39
22	■	9.602092	10.337908	9.713541	10.286459	10.051448	9.948552	■	38
23	45	9.602153	10.337847	9.713618	10.286382	10.051465	9.948535	15	37
24	21	9.602214	10.337786	9.713696	10.286304	10.051481	9.948519	39	36
25	15	9.602275	10.337725	9.713773	10.286227	10.051497	9.948503	45	35
26	■	9.602337	10.337663	9.713850	10.286150	10.051514	9.948486	30	34
27	45	9.602398	10.337602	9.713928	10.286072	10.051530	9.948470	15	33
28	22	9.602459	10.337541	9.714005	10.285995	10.051547	9.948453	38	32
29	15	9.602520	10.337480	9.714082	10.285918	10.051563	9.948437	45	31
30	30	9.602581	10.337419	9.714160	10.285840	10.051579	9.948421	30	30
31	45	9.602642	10.337358	9.714237	10.285763	10.051596	9.948404	15	29
32	23	9.602703	10.337297	9.714314	10.285686	10.051612	9.948388	37	28
33	15	9.602764	10.337236	9.714392	10.285608	10.051628	9.948372	45	27
34	30	9.602825	10.337175	9.714469	10.285531	10.051645	9.948355	■	26
35	45	9.602886	10.337115	9.714546	10.285454	10.051661	9.948339	15	25
36	24	9.602946	10.337054	9.714624	10.285376	10.051677	9.948323	36	24
37	15	9.603007	10.336993	9.714701	10.285299	10.051694	9.948306	45	23
38	30	9.603068	10.336932	9.714778	10.285222	10.051710	9.948290	30	22
39	45	9.603129	10.336871	9.714856	10.285144	10.051727	9.948273	15	21
40	25	9.603190	10.336810	9.714933	10.285067	10.051743	9.948257	35	20
41	15	9.603251	10.336749	9.715010	10.284990	10.051759	9.948241	45	19
42	30	9.603312	10.336688	9.715087	10.284913	10.051776	9.948224	30	18
43	45	9.603373	10.336627	9.715165	10.284835	10.051792	9.948208	15	17
44	26	9.603433	10.336567	9.715242	10.284758	10.051808	9.948191	34	16
45	15	9.603494	10.336506	9.715319	10.284681	10.051825	9.948175	45	15
46	30	9.603555	10.336445	9.715396	10.284604	10.051841	9.948159	30	14
47	45	9.603616	10.336384	9.715474	10.284526	10.051858	9.948142	15	13
48	27	9.603677	10.336323	9.715551	10.284449	10.051874	9.948126	33	12
49	15	9.603738	10.336262	9.715628	10.284372	10.051890	9.948110	45	11
50	30	9.603798	10.336202	9.715706	10.284295	10.051907	9.948093	■	10
51	45	9.603859	10.336141	9.715782	10.284218	10.051923	9.948077	15	9
52	28	9.603920	10.336080	9.715859	10.284141	10.051940	9.948060	32	8
53	15	9.603981	10.336019	9.715937	10.284063	10.051956	9.948044	45	7
54	30	9.604041	10.335959	9.716014	10.283986	10.051973	9.948027	30	6
55	45	9.604102	10.335898	9.716091	10.283909	10.051989	9.948011	15	5
56	29	9.604163	10.335837	9.716168	10.283832	10.052005	9.947995	31	4
57	15	9.604223	10.335777	9.716246	10.283755	10.052022	9.947978	45	3
58	30	9.604284	10.335716	9.716322	10.283678	10.052038	9.947962	30	2
59	45	9.604344	10.335656	9.716400	10.283600	10.052055	9.947945	15	1
60	30	9.604406	10.335594	9.716477	10.283523	10.052071	9.947929	30	0
deg.	min.	sine.	coscant.	tangent.	cotangent.	secant.	sine.	sec.	deg.
1° 10'		LOG. SINES, &c.						62 deg.	

1° 50'.		LOG. SINES, &c. (L)				27 deg.	
N	W	sin.	coscant.	tan.	secant.	sin.	W
30		9.664406	10.335594	9.716477	10.283523	9.947929	30
15		9.664466	10.335534	9.716554	10.283446	9.947912	45
30		9.664527	10.335473	9.716631	10.283369	9.947896	30
45		9.664588	10.335414	9.716708	10.283292	9.947880	15
31		9.664648	10.335352	9.716785	10.283215	9.947863	29
15		9.664709	10.335291	9.716862	10.283138	9.947847	45
30		9.664769	10.335231	9.716939	10.283061	9.947830	30
45		9.664830	10.335170	9.717016	10.282984	9.947814	15
32		9.664891	10.335109	9.717093	10.282907	9.947797	28
15		9.664951	10.335049	9.717170	10.282830	9.947781	45
30		9.665012	10.334988	9.717247	10.282753	9.947764	30
45		9.665072	10.334928	9.717324	10.282676	9.947748	15
33		9.665133	10.334867	9.717401	10.282599	9.947731	27
15		9.665193	10.334807	9.717478	10.282522	9.947715	45
30		9.665254	10.334746	9.717555	10.282445	9.947698	30
45		9.665314	10.334686	9.717632	10.282368	9.947682	15
34		9.665375	10.334625	9.717709	10.282291	9.947665	26
15		9.665435	10.334565	9.717786	10.282214	9.947649	45
30		9.665496	10.334504	9.717863	10.282137	9.947632	30
45		9.665556	10.334444	9.717940	10.282060	9.947616	15
35		9.665617	10.334383	9.718017	10.281983	9.947599	25
15		9.665677	10.334323	9.718094	10.281906	9.947583	45
30		9.665738	10.334262	9.718171	10.281829	9.947566	30
45		9.665798	10.334202	9.718248	10.281752	9.947550	15
36		9.665859	10.334141	9.718325	10.281675	9.947533	24
15		9.665919	10.334081	9.718402	10.281598	9.947517	45
30		9.665979	10.334021	9.718479	10.281521	9.947500	30
45		9.666040	10.333960	9.718556	10.281444	9.947484	15
37		9.666100	10.333900	9.718633	10.281367	9.947467	23
15		9.666160	10.333840	9.718710	10.281290	9.947451	45
30		9.666221	10.333779	9.718786	10.281214	9.947434	30
45		9.666281	10.333719	9.718863	10.281137	9.947418	15
38		9.666341	10.333659	9.718940	10.281060	9.947401	22
15		9.666402	10.333598	9.719017	10.280983	9.947385	45
30		9.666462	10.333538	9.719094	10.280906	9.947368	30
45		9.666522	10.333478	9.719171	10.280829	9.947352	15
39		9.666583	10.333417	9.719248	10.280752	9.947335	21
15		9.666643	10.333357	9.719324	10.280676	9.947319	45
30		9.666703	10.333297	9.719401	10.280599	9.947302	30
45		9.666764	10.333237	9.719478	10.280522	9.947285	15
40		9.666824	10.333176	9.719555	10.280445	9.947269	20
15		9.666884	10.333116	9.719632	10.280368	9.947252	45
30		9.666944	10.333056	9.719708	10.280292	9.947236	30
45		9.667004	10.332996	9.719785	10.280215	9.947219	15
41		9.667065	10.332935	9.719862	10.280138	9.947203	19
15		9.667125	10.332875	9.719939	10.280061	9.947186	45
30		9.667185	10.332815	9.720015	10.279985	9.947169	30
45		9.667245	10.332755	9.720092	10.279908	9.947153	15
42		9.667306	10.332695	9.720169	10.279831	9.947136	18
15		9.667366	10.332634	9.720246	10.279754	9.947120	45
30		9.667426	10.332574	9.720322	10.279678	9.947103	30
45		9.667486	10.332514	9.720399	10.279601	9.947087	15
43		9.667546	10.332454	9.720476	10.279524	9.947070	17
15		9.667606	10.332394	9.720553	10.279447	9.947053	45
30		9.667666	10.332334	9.720629	10.279371	9.947037	30
45		9.667726	10.332274	9.720706	10.279294	9.947020	15
44		9.667786	10.332214	9.720783	10.279217	9.947004	16
15		9.667846	10.332154	9.720859	10.279141	9.946987	45
30		9.667906	10.332094	9.720936	10.279064	9.946970	30
45		9.667966	10.332034	9.721013	10.278987	9.946954	15
45		9.668026	10.331974	9.721089	10.278911	9.946937	15
		cosine.	secant.	cotangent.	tangent.	coscant.	sin.

4° 9'.

LOG. SINES, &c.

62 deg.

1° 51'.		LOG. SINES, &c. (L.)						27 deg.	
sec.		sine.	coscant.	tangent.	cotangent.	secant.	cosec.		sec.
0	45	9.668026	10.331974	9.721089	10.278911	10.053063	9.946937	15	60
1	15	9.668086	10.331914	9.721166	10.278834	10.053079	9.946921	45	59
2	30	9.668147	10.331853	9.721243	10.278757	10.053096	9.946904	30	58
3	45	9.668207	10.331793	9.721319	10.278681	10.053113	9.946887	15	57
4	46	9.668266	10.331734	9.721396	10.278604	10.053129	9.946871	14	
5	15	9.668326	10.331674	9.721472	10.278528	10.053146	9.946854	45	55
6	30	9.668386	10.331614	9.721549	10.278451	10.053163	9.946837	30	54
7	45	9.668446	10.331554	9.721626	10.278374	10.053179	9.946821	15	53
8	47	9.668506	10.331494	9.721702	10.278298	10.053196	9.946804	14	52
9	15	9.668566	10.331434	9.721779	10.278221	10.053213	9.946787	45	51
10	30	9.668626	10.331374	9.721855	10.278145	10.053229	9.946771	30	50
11	45	9.668686	10.331314	9.721932	10.278068	10.053246	9.946754	15	
12	48	9.668746	10.331254	9.722008	10.277992	10.053262	9.946738	12	48
13	15	9.668806	10.331194	9.722085	10.277915	10.053279	9.946721		47
14		9.668866	10.331134	9.722162	10.277838	10.053296	9.946704	30	46
15	45	9.668926	10.331074	9.722238	10.277762	10.053312	9.946688	15	45
16	49	9.668986	10.331014	9.722315	10.277685	10.053329	9.946671	11	44
17	15	9.669045	10.330955	9.722391	10.277609	10.053346	9.946654	45	43
18	30	9.669105	10.330895	9.722468	10.277532	10.053362	9.946638	30	42
19	45	9.669165	10.330835	9.722544	10.277456	10.053379	9.946621	15	41
20	50	9.669225	10.330775	9.722621	10.277379	10.053396	9.946604	10	40
21	15	9.669285	10.330715	9.722697	10.277303	10.053412	9.946588	45	39
22	30	9.669345	10.330655	9.722774	10.277226	10.053429	9.946571	30	
23	45	9.669404	10.330596	9.722850	10.277150	10.053446	9.946554	15	37
24	51	9.669464	10.330536	9.722927	10.277073	10.053462	9.946538	9	36
25	15	9.669524	10.330476	9.723003	10.276997	10.053479	9.946521		35
26	30	9.669584	10.330416	9.723079	10.276921	10.053496	9.946504	30	34
27	45	9.669643	10.330357	9.723156	10.276844	10.053513	9.946487	15	33
28	52	9.669703	10.330297	9.723232	10.276768	10.053529	9.946471	8	32
29	15	9.669763	10.330237	9.723309	10.276691	10.053546	9.946454	45	31
30	30	9.669823	10.330177	9.723385	10.276615	10.053563	9.946437	30	30
31		9.669882	10.330118	9.723462	10.276538	10.053579	9.946421	15	29
32	53	9.669942	10.330058	9.723538	10.276462	10.053596	9.946404	7	28
33	15	9.670002	10.329998	9.723614	10.276386	10.053613	9.946387	45	27
34	30	9.670061	10.329939	9.723691	10.276309	10.053630	9.946370	30	26
35	45	9.670121	10.329879	9.723767	10.276233	10.053646	9.946354	15	25
36	54	9.670181	10.329819	9.723844	10.276156	10.053663	9.946337	6	24
37	15	9.670240	10.329760	9.723920	10.276080	10.053680	9.946320	45	23
38	30	9.670300	10.329700	9.723996	10.276004	10.053696	9.946304	30	22
39	45	9.670360	10.329640	9.724073	10.275927	10.053713	9.946287	15	21
40	55	9.670419	10.329581	9.724149	10.275851	10.053730	9.946270	5	20
41	15	9.670479	10.329521	9.724225	10.275775	10.053747	9.946253	45	19
42	30	9.670538	10.329462	9.724302	10.275698	10.053763	9.946237		18
43	45	9.670598	10.329402	9.724378	10.275622	10.053780	9.946220	15	17
44	56	9.670658	10.329342	9.724454	10.275546	10.053797	9.946203		16
45	15	9.670717	10.329283	9.724531	10.275469	10.053814	9.946187	45	15
46	30	9.670777	10.329223	9.724607	10.275393	10.053830	9.946170	30	14
47	45	9.670836	10.329164	9.724683	10.275317	10.053847	9.946153	15	13
48	57	9.670896	10.329104	9.724759	10.275241	10.053864	9.946136	3	12
49	15	9.670955	10.329045	9.724836	10.275164	10.053881	9.946119	45	11
50	30	9.671015	10.328985	9.724912	10.275088	10.053897	9.946102	30	10
51	45	9.671074	10.328926	9.724988	10.275012	10.053914	9.946086	15	9
52	58	9.671134	10.328866	9.725065	10.274935	10.053931	9.946069	2	8
53	15	9.671193	10.328807	9.725141	10.274859	10.053948	9.946052	45	7
54	30	9.671253	10.328747	9.725217	10.274783	10.053964	9.946036	30	6
55	45	9.671312	10.328688	9.725293	10.274707	10.053981	9.946019	15	5
56	59	9.671372	10.328628	9.725369	10.274631	10.053998	9.946002	1	4
57	15	9.671431	10.328569	9.725446	10.274554	10.054015	9.945986	45	3
58	30	9.671490	10.328510	9.725522	10.274478	10.054032	9.945968	30	2
59	45	9.671550	10.328450	9.725598	10.274402	10.054048	9.945952	15	1
60	60	9.671609	10.328391	9.725674	10.274326	10.054065	9.945936	0	0
sec.		sine.	coscant.	tangent.	cotangent.	secant.	cosec.		sec.
4° 51'.		LOG. SINES, &c.						62 deg.	

1 ^h 52 ^m .		LOG. SINES, &c. (L.)					28 deg.		
'	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	'	sec.
0		9.671609	10.328391	9.725674	10.274326	10.054065	9.945935	60	60
15		9.671669	10.328331	9.725751	10.274249	10.054082	9.945918	45	59
30		9.671728	10.328272	9.725827	10.274173	10.054099	9.945901	30	58
45		9.671787	10.328213	9.725903	10.274097	10.054116	9.945884	15	57
1		9.671847	10.328153	9.725979	10.274021	10.054132	9.945868	59	56
15		9.671906	10.328094	9.726055	10.273945	10.054149	9.945851	45	55
30		9.671965	10.328035	9.726131	10.273869	10.054166	9.945834	30	54
45		9.672025	10.327975	9.726207	10.273793	10.054183	9.945817	15	53
2		9.672084	10.327916	9.726284	10.273716	10.054200	9.945800	58	52
15		9.672143	10.327857	9.726360	10.273640	10.054216	9.945784	45	51
30		9.672203	10.327797	9.726436	10.273564	10.054233	9.945767	30	50
45		9.672262	10.327738	9.726512	10.273488	10.054250	9.945750	15	49
3		9.672321	10.327679	9.726588	10.273412	10.054267	9.945733	57	48
15		9.672381	10.327619	9.726664	10.273336	10.054284	9.945716	45	47
30		9.672440	10.327560	9.726740	10.273260	10.054301	9.945699	30	46
45		9.672499	10.327501	9.726816	10.273184	10.054317	9.945683	15	45
4		9.672558	10.327442	9.726892	10.273108	10.054334	9.945666	56	44
15		9.672618	10.327382	9.726968	10.273032	10.054351	9.945649	45	43
30		9.672677	10.327323	9.727045	10.272955	10.054368	9.945632	30	42
45		9.672736	10.327264	9.727121	10.272879	10.054385	9.945615	15	41
5		9.672795	10.327205	9.727197	10.272803	10.054402	9.945598	55	40
15		9.672854	10.327146	9.727273	10.272727	10.054418	9.945582	45	39
30		9.672913	10.327087	9.727349	10.272651	10.054435	9.945565	30	38
45		9.672973	10.327027	9.727425	10.272575	10.054452	9.945548	15	37
6		9.673032	10.326968	9.727501	10.272499	10.054469	9.945531	54	36
15		9.673091	10.326909	9.727577	10.272423	10.054486	9.945514	45	35
30		9.673150	10.326850	9.727653	10.272347	10.054503	9.945497	30	34
45		9.673209	10.326791	9.727729	10.272271	10.054520	9.945480	15	33
7		9.673268	10.326732	9.727805	10.272195	10.054536	9.945464	53	32
15		9.673327	10.326673	9.727881	10.272119	10.054553	9.945447	45	31
30		9.673387	10.326613	9.727957	10.272043	10.054570	9.945430	30	30
45		9.673446	10.326554	9.728033	10.271967	10.054587	9.945413	15	29
8		9.673505	10.326495	9.728109	10.271891	10.054604	9.945396	52	28
15		9.673564	10.326436	9.728185	10.271815	10.054621	9.945379	45	27
30		9.673623	10.326377	9.728261	10.271739	10.054638	9.945362	30	26
45		9.673682	10.326318	9.728336	10.271664	10.054655	9.945345	15	25
9		9.673741	10.326259	9.728412	10.271588	10.054672	9.945328	51	24
15		9.673800	10.326200	9.728488	10.271512	10.054688	9.945312	45	23
30		9.673859	10.326141	9.728564	10.271436	10.054705	9.945295	30	22
45		9.673918	10.326082	9.728640	10.271360	10.054722	9.945278	15	21
10		9.673977	10.326023	9.728716	10.271284	10.054739	9.945261	50	20
15		9.674036	10.325964	9.728792	10.271208	10.054756	9.945244	45	19
30		9.674095	10.325905	9.728868	10.271132	10.054773	9.945227	30	18
45		9.674154	10.325846	9.728944	10.271056	10.054790	9.945210	15	17
11		9.674213	10.325787	9.729020	10.270980	10.054807	9.945193	49	16
15		9.674272	10.325728	9.729095	10.270905	10.054824	9.945176	45	15
30		9.674331	10.325669	9.729171	10.270829	10.054841	9.945159	30	14
45		9.674390	10.325610	9.729247	10.270753	10.054858	9.945142	15	13
12		9.674448	10.325552	9.729323	10.270677	10.054875	9.945125	48	12
15		9.674507	10.325493	9.729399	10.270601	10.054892	9.945108	45	11
30		9.674566	10.325434	9.729475	10.270525	10.054908	9.945092	30	10
45		9.674625	10.325375	9.729550	10.270450	10.054925	9.945075	15	9
13		9.674684	10.325316	9.729626	10.270374	10.054942	9.945058	47	8
15		9.674743	10.325257	9.729702	10.270298	10.054959	9.945041	45	7
30		9.674802	10.325198	9.729778	10.270222	10.054976	9.945024	30	6
45		9.674860	10.325140	9.729854	10.270146	10.054993	9.945007	15	5
14		9.674919	10.325081	9.729929	10.270071	10.055010	9.944990	46	4
15		9.674978	10.325022	9.730005	10.269995	10.055027	9.944973	45	3
30		9.675037	10.324963	9.730081	10.269919	10.055044	9.944956	30	2
45		9.675096	10.324904	9.730157	10.269843	10.055061	9.944939	15	1
15		9.675155	10.324845	9.730232	10.269768	10.055078	9.944922	45	0
'	"	cosine	secant.	cotangent.	tangent.	cosecant.	sine.	'	sec.
4 ^h 7 ^m .		LOG. SINES, &c.					61 deg.		

1° 53'		LOG. SINES, &c. (1.)						28 deg.	
sec.	"	sine.	coscant.	tangent.	cotangent.	secant.	cosec.	"	sec.
0	15	9.676155	10.324845	9.730232	10.269768	10.055478	9.944922	45	60
1	15	9.675213	10.324787	9.730308	10.269692	10.055095	9.944905	45	59
2	30	9.675272	10.324728	9.730384	10.269616	10.055112	9.944888	30	58
3	45	9.675331	10.324669	9.730460	10.269540	10.055129	9.944871	15	57
4	16	9.675390	10.324610	9.730535	10.269465	10.055146	9.944854	44	56
5	15	9.675448	10.324552	9.730611	10.269389	10.055163	9.944837	45	55
6	30	9.675507	10.324493	9.730687	10.269313	10.055180	9.944820	30	54
7	45	9.675566	10.324434	9.730763	10.269237	10.055197	9.944803	15	53
8	17	9.675624	10.324375	9.730838	10.269162	10.055214	9.944786	43	52
9	15	9.675683	10.324317	9.730914	10.269086	10.055231	9.944769	45	51
10	30	9.675742	10.324258	9.730990	10.269010	10.055248	9.944752	30	50
11	45	9.675800	10.324200	9.731065	10.268935	10.055265	9.944735	15	49
12	18	9.675859	10.324141	9.731141	10.268859	10.055282	9.944718	42	48
13	15	9.675918	10.324082	9.731217	10.268783	10.055299	9.944701	45	47
14	30	9.675976	10.324024	9.731292	10.268708	10.055316	9.944684	30	46
15	45	9.676035	10.323965	9.731368	10.268632	10.055333	9.944667	15	45
16	19	9.676094	10.323906	9.731444	10.268556	10.055350	9.944650	41	44
17	15	9.676152	10.323848	9.731519	10.268481	10.055367	9.944633	45	43
18	30	9.676211	10.323789	9.731595	10.268405	10.055384	9.944616	30	42
19	45	9.676269	10.323731	9.731670	10.268330	10.055401	9.944599	15	41
20	20	9.676328	10.323672	9.731746	10.268254	10.055418	9.944582	40	40
21	15	9.676387	10.323613	9.731822	10.268178	10.055435	9.944565	45	39
22	30	9.676445	10.323555	9.731897	10.268103	10.055452	9.944548	30	38
23	45	9.676504	10.323496	9.731973	10.268027	10.055469	9.944531	15	37
24	21	9.676562	10.323438	9.732048	10.267952	10.055486	9.944514	39	36
25	15	9.676621	10.323379	9.732124	10.267876	10.055503	9.944497	45	35
26	30	9.676679	10.323321	9.732199	10.267801	10.055520	9.944480	30	34
27	45	9.676738	10.323262	9.732275	10.267725	10.055537	9.944463	15	33
28	22	9.676796	10.323204	9.732351	10.267649	10.055554	9.944446	38	32
29	15	9.676855	10.323145	9.732426	10.267574	10.055571	9.944429	45	31
30	30	9.676913	10.323087	9.732502	10.267498	10.055588	9.944412	30	30
31	45	9.676972	10.323028	9.732577	10.267423	10.055605	9.944395	15	29
32	23	9.677030	10.322970	9.732653	10.267347	10.055622	9.944378	37	28
33	15	9.677089	10.322911	9.732728	10.267271	10.055639	9.944361	45	27
34	30	9.677147	10.322853	9.732804	10.267196	10.055656	9.944344	30	26
35	45	9.677206	10.322795	9.732879	10.267121	10.055673	9.944327	15	25
36	24	9.677264	10.322736	9.732955	10.267045	10.055690	9.944310	36	24
37	15	9.677322	10.322678	9.733030	10.266970	10.055707	9.944293	45	23
38	30	9.677381	10.322619	9.733106	10.266894	10.055724	9.944276	30	22
39	45	9.677439	10.322561	9.733181	10.266819	10.055741	9.944259	15	21
40	25	9.677497	10.322503	9.733257	10.266743	10.055758	9.944242	35	20
41	15	9.677556	10.322444	9.733332	10.266668	10.055775	9.944225	45	19
42	30	9.677614	10.322386	9.733407	10.266593	10.055792	9.944208	30	18
43	45	9.677673	10.322327	9.733483	10.266517	10.055809	9.944191	15	17
44	26	9.677731	10.322269	9.733558	10.266442	10.055826	9.944174	34	16
45	15	9.677789	10.322211	9.733634	10.266366	10.055843	9.944157	45	15
46	30	9.677848	10.322152	9.733709	10.266291	10.055860	9.944140	30	14
47	45	9.677906	10.322094	9.733785	10.266215	10.055877	9.944123	15	13
48	27	9.677964	10.322036	9.733860	10.266140	10.055894	9.944106	33	12
49	15	9.678022	10.321978	9.733935	10.266065	10.055911	9.944089	45	11
50	30	9.678081	10.321919	9.734011	10.265989	10.055928	9.944072	30	10
51	45	9.678139	10.321861	9.734086	10.265914	10.055945	9.944055	15	9
52	28	9.678197	10.321803	9.734162	10.265838	10.055962	9.944038	32	8
53	15	9.678255	10.321745	9.734237	10.265763	10.055979	9.944021	45	7
54	30	9.678314	10.321686	9.734312	10.265688	10.055996	9.944004	30	6
55	45	9.678372	10.321628	9.734388	10.265612	10.056013	9.943987	15	5
56	29	9.678430	10.321570	9.734463	10.265537	10.056030	9.943970	31	4
57	15	9.678488	10.321512	9.734538	10.265462	10.056047	9.943953	45	3
58	30	9.678546	10.321454	9.734614	10.265386	10.056064	9.943936	30	2
59	45	9.678605	10.321395	9.734689	10.265311	10.056081	9.943919	15	1
60	30	9.678663	10.321337	9.734764	10.265236	10.056100	9.943902	30	0
sec.	"	sine.	coscant.	cotangent.	tangent.	secant.	cosec.	"	sec.
4° 53'		LOG. SINES, &c						61 deg.	

1 st 54 ^m .		LOG. SINES, &c. (t.)					28 deg.	
	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
30	9.678663	10.321337	9.734764	10.265236	10.056102	9.943898	30	60
15	9.678721	10.321279	9.734840	10.265160	10.056119	9.943881	45	59
30	9.678779	10.321221	9.734915	10.265085	10.056136	9.943864	30	58
45	9.678837	10.321163	9.734990	10.265010	10.056153	9.943847	15	57
31	9.678895	10.321105	9.735066	10.264934	10.056170	9.943830	29	56
15	9.678954	10.321046	9.735141	10.264859	10.056187	9.943813	45	55
30	9.679012	10.320988	9.735216	10.264784	10.056204	9.943796	30	54
45	9.679070	10.320930	9.735291	10.264709	10.056222	9.943778	15	53
32	9.679128	10.320872	9.735367	10.264633	10.056239	9.943761	28	52
15	9.679186	10.320814	9.735442	10.264558	10.056256	9.943744	45	51
30	9.679244	10.320756	9.735517	10.264483	10.056273	9.943727	30	50
45	9.679302	10.320698	9.735592	10.264408	10.056290	9.943710	15	49
33	9.679360	10.320640	9.735668	10.264332	10.056308	9.943692	27	48
15	9.679418	10.320582	9.735743	10.264257	10.056325	9.943675	45	47
30	9.679476	10.320524	9.735818	10.264182	10.056342	9.943658	30	46
45	9.679534	10.320466	9.735893	10.264107	10.056359	9.943641	15	45
34	9.679592	10.320408	9.735968	10.264032	10.056376	9.943624	26	44
15	9.679650	10.320350	9.736044	10.263956	10.056393	9.943607	45	43
30	9.679708	10.320292	9.736119	10.263881	10.056411	9.943589	30	42
45	9.679766	10.320234	9.736194	10.263806	10.056428	9.943572	15	41
35	9.679824	10.320176	9.736269	10.263731	10.056445	9.943555	25	40
15	9.679882	10.320118	9.736344	10.263656	10.056462	9.943538	45	39
30	9.679940	10.320060	9.736420	10.263580	10.056480	9.943520	30	38
45	9.679998	10.320002	9.736495	10.263505	10.056497	9.943503	15	37
36	9.680056	10.319944	9.736570	10.263430	10.056514	9.943486	24	36
15	9.680114	10.319886	9.736645	10.263355	10.056531	9.943469	45	35
30	9.680172	10.319828	9.736720	10.263280	10.056548	9.943452	30	34
45	9.680230	10.319770	9.736795	10.263205	10.056566	9.943434	15	33
37	9.680288	10.319712	9.736870	10.263130	10.056583	9.943417	23	32
15	9.680345	10.319655	9.736946	10.263054	10.056600	9.943400	45	31
30	9.680403	10.319597	9.737021	10.262979	10.056617	9.943383	30	30
45	9.680461	10.319539	9.737096	10.262904	10.056635	9.943365	15	29
38	9.680519	10.319481	9.737171	10.262829	10.056652	9.943348	22	28
15	9.680577	10.319423	9.737246	10.262754	10.056669	9.943331	45	27
30	9.680635	10.319365	9.737321	10.262679	10.056686	9.943314	30	26
45	9.680693	10.319307	9.737396	10.262604	10.056704	9.943296	15	25
39	9.680750	10.319250	9.737471	10.262529	10.056721	9.943279	21	24
15	9.680808	10.319192	9.737546	10.262454	10.056738	9.943262	45	23
30	9.680866	10.319134	9.737621	10.262379	10.056755	9.943245	30	22
45	9.680924	10.319076	9.737696	10.262304	10.056773	9.943227	15	21
40	9.680982	10.319018	9.737771	10.262229	10.056790	9.943210	20	20
15	9.681039	10.318961	9.737846	10.262154	10.056807	9.943193	45	19
30	9.681097	10.318903	9.737921	10.262079	10.056824	9.943176	30	18
45	9.681155	10.318845	9.737996	10.262004	10.056842	9.943158	15	17
41	9.681213	10.318787	9.738071	10.261929	10.056859	9.943141	19	16
15	9.681270	10.318730	9.738146	10.261854	10.056876	9.943124	45	15
30	9.681328	10.318672	9.738221	10.261779	10.056894	9.943106	30	14
45	9.681386	10.318614	9.738296	10.261704	10.056911	9.943089	15	13
42	9.681443	10.318557	9.738371	10.261629	10.056928	9.943072	18	12
15	9.681501	10.318499	9.738446	10.261554	10.056945	9.943055	45	11
30	9.681559	10.318441	9.738521	10.261479	10.056963	9.943037	30	10
45	9.681616	10.318384	9.738596	10.261404	10.056980	9.943020	15	9
43	9.681674	10.318326	9.738671	10.261329	10.056997	9.943003	17	8
15	9.681732	10.318268	9.738746	10.261254	10.057015	9.942985	45	7
30	9.681789	10.318211	9.738821	10.261179	10.057032	9.942968	30	6
45	9.681847	10.318153	9.738896	10.261104	10.057049	9.942951	15	5
44	9.681905	10.318095	9.738971	10.261029	10.057067	9.942933	16	4
15	9.681962	10.318038	9.739046	10.260954	10.057084	9.942916	45	3
30	9.682020	10.317980	9.739121	10.260879	10.057101	9.942899	30	2
45	9.682077	10.317923	9.739196	10.260804	10.057118	9.942882	15	1
45	9.682135	10.317865	9.739271	10.260729	10.057136	9.942864	15	0
	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
4 th 5 ^m .		LOG. SINES, &c.					61 deg.	

1° 55'.		LOG. SINES, &c. (L.)						28 deg.	
sec.	N	SINE.	COSINE.	tangent.	cotangent.	secant.	COSINE.	N	sec.
0	45	9.682135	10.317865	9.739271	10.260729	10.057136	9.942864	15	60
1	15	9.682192	10.317808	9.739346	10.260654	10.057153	9.942847	45	69
2	30	9.682250	10.317750	9.739420	10.260580	10.057170	9.942830	30	58
3	45	9.682308	10.317693	9.739495	10.260505	10.057188	9.942812	15	57
4	46	9.682365	10.317635	9.739570	10.260430	10.057205	9.942795	14	56
5	15	9.682423	10.317577	9.739645	10.260355	10.057222	9.942778	45	55
6	30	9.682480	10.317520	9.739720	10.260280	10.057240	9.942760	30	54
7	45	9.682538	10.317462	9.739795	10.260205	10.057257	9.942743	15	53
8	47	9.682595	10.317405	9.739870	10.260130	10.057275	9.942725	13	52
9	15	9.682653	10.317347	9.739944	10.260056	10.057292	9.942708	45	51
10	30	9.682710	10.317290	9.740019	10.259981	10.057309	9.942691	30	50
11	45	9.682768	10.317232	9.740094	10.259906	10.057327	9.942673	15	49
12	48	9.682825	10.317175	9.740169	10.259831	10.057344	9.942656	12	48
13	15	9.682882	10.317118	9.740244	10.259756	10.057361	9.942639	45	47
14	30	9.682940	10.317060	9.740318	10.259682	10.057379	9.942621	30	46
15	45	9.682997	10.317003	9.740393	10.259607	10.057396	9.942604	15	45
16	49	9.683055	10.316945	9.740468	10.259532	10.057413	9.942587	11	44
17	15	9.683112	10.316888	9.740543	10.259457	10.057431	9.942569	45	43
18	30	9.683170	10.316830	9.740618	10.259382	10.057448	9.942552	30	42
19	45	9.683227	10.316773	9.740692	10.259308	10.057466	9.942534	15	41
20	50	9.683284	10.316716	9.740767	10.259233	10.057483	9.942517	10	40
21	15	9.683342	10.316658	9.740842	10.259158	10.057500	9.942500	45	39
22	30	9.683399	10.316601	9.740917	10.259083	10.057518	9.942483	30	38
23	45	9.683456	10.316544	9.740991	10.259009	10.057535	9.942465	15	37
24	51	9.683513	10.316486	9.741066	10.258934	10.057552	9.942448	9	36
25	15	9.683571	10.316429	9.741141	10.258859	10.057570	9.942430	45	35
26	30	9.683628	10.316372	9.741216	10.258784	10.057587	9.942413	30	34
27	45	9.683686	10.316314	9.741290	10.258710	10.057605	9.942395	15	33
28	52	9.683743	10.316257	9.741365	10.258635	10.057622	9.942378	8	32
29	15	9.683800	10.316200	9.741440	10.258560	10.057640	9.942360	45	31
30	30	9.683857	10.316143	9.741514	10.258486	10.057657	9.942343	30	30
31	45	9.683915	10.316085	9.741589	10.258411	10.057674	9.942326	15	29
32	53	9.683972	10.316028	9.741664	10.258336	10.057692	9.942308	7	28
33	15	9.684029	10.315971	9.741738	10.258261	10.057709	9.942291	45	27
34	30	9.684086	10.315914	9.741813	10.258187	10.057727	9.942273	30	26
35	45	9.684144	10.315856	9.741888	10.258112	10.057744	9.942256	15	25
36	54	9.684201	10.315799	9.741962	10.258038	10.057761	9.942239	6	24
37	15	9.684258	10.315742	9.742037	10.257963	10.057779	9.942221	45	23
38	30	9.684315	10.315685	9.742112	10.257888	10.057796	9.942204	30	22
39	45	9.684373	10.315627	9.742186	10.257814	10.057814	9.942186	15	21
40	55	9.684430	10.315570	9.742261	10.257739	10.057831	9.942169	5	20
41	15	9.684487	10.315513	9.742336	10.257664	10.057849	9.942151	45	19
42	30	9.684544	10.315456	9.742410	10.257590	10.057866	9.942134	30	18
43	45	9.684601	10.315399	9.742485	10.257515	10.057884	9.942116	15	17
44	56	9.684658	10.315342	9.742559	10.257441	10.057901	9.942099	4	16
45	15	9.684715	10.315285	9.742634	10.257366	10.057919	9.942081	45	15
46	30	9.684773	10.315227	9.742708	10.257292	10.057936	9.942064	30	14
47	45	9.684830	10.315170	9.742783	10.257217	10.057953	9.942047	15	13
48	57	9.684887	10.315113	9.742858	10.257142	10.057971	9.942029	3	12
49	15	9.684944	10.315056	9.742932	10.257068	10.057988	9.942012	45	11
50	30	9.685001	10.314999	9.743007	10.256993	10.058006	9.941994	30	10
51	45	9.685058	10.314942	9.743081	10.256919	10.058023	9.941977	15	9
52	58	9.685115	10.314885	9.743156	10.256844	10.058041	9.941959	2	8
53	15	9.685172	10.314828	9.743230	10.256770	10.058058	9.941942	45	7
54	30	9.685229	10.314771	9.743305	10.256695	10.058076	9.941924	30	6
55	45	9.685286	10.314714	9.743379	10.256621	10.058093	9.941907	15	5
56	59	9.685343	10.314657	9.743454	10.256546	10.058111	9.941889	1	4
57	15	9.685400	10.314600	9.743528	10.256472	10.058128	9.941872	45	3
58	30	9.685457	10.314543	9.743603	10.256397	10.058146	9.941854	30	2
59	45	9.685514	10.314486	9.743677	10.256323	10.058163	9.941837	15	1
60	60	9.685571	10.314429	9.743752	10.256248	10.058181	9.941819	0	0
sec.	N	cosine.	secant.	cotangent.	tangent.	coscant.	sine.	N	sec.
4° 4'.		LOG. SINES, &c.						61 deg.	

1° 56'		LOG. SINES, &c. (L.)					29 deg.	
	sec.	coscant.	tangent.	cotangent.	secant.	cosecant.		sec.
0	9.685571	10.314429	9.743752	10.256248	10.058181	9.941819	60	00
15	9.685628	10.314372	9.743626	10.256174	10.058198	9.941802	59	59
30	9.685685	10.314315	9.743501	10.256099	10.058216	9.941784	59	58
45	9.685742	10.314258	9.743375	10.256025	10.058233	9.941767	59	57
1	9.685799	10.314201	9.744050	10.255950	10.058251	9.941749	59	56
15	9.685856	10.314144	9.744124	10.255876	10.058268	9.941732	59	55
30	9.685913	10.314087	9.744199	10.255801	10.058286	9.941714	59	54
45	9.685970	10.314030	9.744273	10.255727	10.058303	9.941697	59	53
2	9.686027	10.313973	9.744348	10.255652	10.058321	9.941679	58	52
15	9.686084	10.313916	9.744422	10.255578	10.058338	9.941662	58	51
30	9.686140	10.313860	9.744496	10.255504	10.058356	9.941644	58	50
45	9.686197	10.313803	9.744571	10.255429	10.058374	9.941626	58	49
3	9.686254	10.313746	9.744645	10.255355	10.058391	9.941609	57	48
15	9.686311	10.313689	9.744720	10.255280	10.058409	9.941591	57	47
30	9.686368	10.313632	9.744794	10.255206	10.058426	9.941574	57	46
45	9.686425	10.313575	9.744868	10.255132	10.058444	9.941556	57	45
4	9.686482	10.313518	9.744943	10.255057	10.058461	9.941539	56	44
15	9.686538	10.313462	9.745017	10.254983	10.058479	9.941521	56	43
30	9.686595	10.313405	9.745092	10.254908	10.058496	9.941504	56	42
45	9.686652	10.313348	9.745166	10.254834	10.058514	9.941486	56	41
5	9.686709	10.313291	9.745240	10.254760	10.058532	9.941468	55	40
15	9.686766	10.313234	9.745315	10.254685	10.058549	9.941451	55	39
30	9.686822	10.313178	9.745389	10.254611	10.058567	9.941433	55	38
45	9.686879	10.313121	9.745463	10.254537	10.058584	9.941416	55	37
6	9.686936	10.313064	9.745538	10.254462	10.058602	9.941398	54	36
15	9.686993	10.313007	9.745612	10.254388	10.058619	9.941381	54	35
30	9.687049	10.312951	9.745686	10.254314	10.058637	9.941363	54	34
45	9.687106	10.312894	9.745761	10.254239	10.058655	9.941346	54	33
7	9.687163	10.312837	9.745835	10.254165	10.058673	9.941328	53	32
15	9.687219	10.312781	9.745909	10.254091	10.058690	9.941310	53	31
30	9.687276	10.312724	9.745983	10.254017	10.058707	9.941293	53	30
45	9.687333	10.312667	9.746058	10.253942	10.058725	9.941275	53	29
8	9.687389	10.312611	9.746132	10.253868	10.058743	9.941257	52	28
15	9.687446	10.312554	9.746206	10.253794	10.058760	9.941240	52	27
30	9.687503	10.312497	9.746280	10.253720	10.058778	9.941222	52	26
45	9.687559	10.312441	9.746355	10.253645	10.058795	9.941205	52	25
9	9.687616	10.312384	9.746429	10.253571	10.058813	9.941187	51	24
15	9.687673	10.312327	9.746503	10.253497	10.058831	9.941169	51	23
30	9.687729	10.312271	9.746577	10.253423	10.058849	9.941152	51	22
45	9.687786	10.312214	9.746652	10.253348	10.058866	9.941134	51	21
10	9.687842	10.312158	9.746726	10.253274	10.058883	9.941117	50	20
15	9.687899	10.312101	9.746800	10.253200	10.058901	9.941099	50	19
30	9.687956	10.312044	9.746874	10.253126	10.058919	9.941081	50	18
45	9.688013	10.311988	9.746948	10.253052	10.058936	9.941064	50	17
11	9.688069	10.311931	9.747023	10.252977	10.058954	9.941046	49	16
15	9.688126	10.311875	9.747097	10.252903	10.058972	9.941028	49	15
30	9.688183	10.311818	9.747171	10.252829	10.058990	9.941011	49	14
45	9.688239	10.311762	9.747245	10.252755	10.059007	9.940993	49	13
12	9.688295	10.311705	9.747319	10.252681	10.059025	9.940975	48	12
15	9.688352	10.311649	9.747394	10.252606	10.059043	9.940958	48	11
30	9.688408	10.311592	9.747468	10.252532	10.059060	9.940940	48	10
45	9.688464	10.311536	9.747542	10.252458	10.059078	9.940922	48	9
13	9.688521	10.311479	9.747616	10.252384	10.059095	9.940905	47	8
15	9.688577	10.311423	9.747690	10.252310	10.059113	9.940887	47	7
30	9.688634	10.311366	9.747764	10.252236	10.059131	9.940869	47	6
45	9.688690	10.311310	9.747838	10.252162	10.059148	9.940852	47	5
14	9.688747	10.311253	9.747912	10.252088	10.059166	9.940834	46	4
15	9.688803	10.311197	9.747987	10.252013	10.059184	9.940816	46	3
30	9.688859	10.311141	9.748061	10.251939	10.059201	9.940799	46	2
45	9.688916	10.311084	9.748135	10.251865	10.059219	9.940781	46	1
15	9.688972	10.311028	9.748209	10.251791	10.059237	9.940763	45	0
	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.		sec.
4° 3'		LOG. SINES, &c.					60 deg.	

1° 57'.		LOG. SINES, &c. (L.)						29 deg.	
sec.	"	sine.	coscant.	tangent.	cotangent.	secant.	cosec.	"	
0	15	9.688073	10.311028	9.748209	10.251791	10.069237	9.940763	45	
1	15	9.689029	10.310971	9.748283	10.251717	10.069254	9.940746	45	
2	30	9.689085	10.310915	9.748357	10.251643	10.069272	9.940728	30	
3	45	9.689141	10.310859	9.748431	10.251569	10.069290	9.940710	15	
4	16	9.689198	10.310802	9.748505	10.251495	10.069307	9.940693	44	
5	15	9.689254	10.310746	9.748579	10.251421	10.069325	9.940675	45	
6	30	9.689310	10.310690	9.748653	10.251347	10.069343	9.940657	30	
7	45	9.689367	10.310633	9.748727	10.251273	10.069360	9.940640	15	
8	17	9.689423	10.310577	9.748801	10.251199	10.069378	9.940622	43	
9	15	9.689479	10.310521	9.748875	10.251125	10.069396	9.940604	45	
10	30	9.689535	10.310464	9.748949	10.251051	10.069414	9.940586	30	
11	45	9.689592	10.310408	9.749023	10.250977	10.069431	9.940568	15	
12	18	9.689648	10.310352	9.749097	10.250903	10.069449	9.940551	42	
13	15	9.689705	10.310295	9.749171	10.250829	10.069467	9.940533	45	
14	30	9.689761	10.310239	9.749245	10.250755	10.069485	9.940515	30	
15	45	9.689817	10.310183	9.749319	10.250681	10.069503	9.940497	15	
16	19	9.689873	10.310127	9.749393	10.250607	10.069520	9.940480	41	
17	15	9.689930	10.310070	9.749467	10.250533	10.069538	9.940462	45	
18	30	9.689986	10.310014	9.749541	10.250459	10.069555	9.940445	30	
19	45	9.690042	10.309958	9.749615	10.250385	10.069573	9.940427	15	
20	20	9.690098	10.309902	9.749689	10.250311	10.069591	9.940409	40	
21	15	9.690154	10.309846	9.749763	10.250237	10.069609	9.940391	45	
22	30	9.690211	10.309789	9.749837	10.250163	10.069626	9.940374	30	
23	45	9.690267	10.309733	9.749911	10.250089	10.069644	9.940356	15	
24	21	9.690323	10.309677	9.749985	10.250015	10.069662	9.940338	39	
25	15	9.690379	10.309621	9.750059	10.249941	10.069680	9.940320	45	
26	30	9.690435	10.309565	9.750133	10.249867	10.069697	9.940303	30	
27	45	9.690491	10.309509	9.750207	10.249793	10.069715	9.940285	15	
28	22	9.690548	10.309453	9.750281	10.249719	10.069733	9.940267	38	
29	15	9.690604	10.309396	9.750354	10.249645	10.069751	9.940249	45	
30	30	9.690660	10.309340	9.750428	10.249571	10.069769	9.940231	30	
31	45	9.690716	10.309284	9.750502	10.249497	10.069786	9.940214	15	
32	23	9.690772	10.309228	9.750576	10.249424	10.069804	9.940196	37	
33	15	9.690828	10.309172	9.750650	10.249350	10.069822	9.940178	45	
34	30	9.690884	10.309116	9.750724	10.249276	10.069840	9.940160	30	
35	45	9.690940	10.309060	9.750798	10.249202	10.069858	9.940142	15	
36	24	9.690996	10.309004	9.750872	10.249128	10.069875	9.940125	36	
37	15	9.691052	10.308948	9.750945	10.249055	10.069893	9.940107	45	
38	30	9.691108	10.308892	9.751019	10.248981	10.069911	9.940089	30	
39	45	9.691164	10.308836	9.751093	10.248907	10.069929	9.940071	15	
40	25	9.691220	10.308780	9.751167	10.248833	10.069947	9.940053	35	
41	15	9.691276	10.308724	9.751241	10.248759	10.069964	9.940036	45	
42	30	9.691332	10.308668	9.751315	10.248685	10.069982	9.940018	30	
43	45	9.691388	10.308612	9.751389	10.248612	10.069999	9.940000	15	
44	26	9.691444	10.308556	9.751462	10.248538	10.069918	9.939982	34	
45	15	9.691500	10.308500	9.751536	10.248464	10.069936	9.939964	45	
46	30	9.691556	10.308444	9.751610	10.248390	10.069953	9.939947	30	
47	45	9.691612	10.308388	9.751683	10.248317	10.069971	9.939929	15	
48	27	9.691668	10.308332	9.751757	10.248243	10.069989	9.939911	33	
49	15	9.691724	10.308276	9.751831	10.248169	10.0699107	9.939893	45	
50	30	9.691780	10.308220	9.751905	10.248095	10.0699125	9.939875	30	
51	45	9.691836	10.308164	9.751979	10.248021	10.0699143	9.939857	15	
52	28	9.691892	10.308108	9.752052	10.247948	10.0699160	9.939840	32	
53	15	9.691948	10.308052	9.752126	10.247874	10.0699178	9.939822	45	
54	30	9.692004	10.307996	9.752200	10.247800	10.0699196	9.939804	30	
55	45	9.692060	10.307940	9.752273	10.247727	10.0699214	9.939786	15	
56	29	9.692116	10.307885	9.752347	10.247653	10.0699232	9.939768	31	
57	15	9.692171	10.307829	9.752421	10.247579	10.0699250	9.939750	45	
58	30	9.692227	10.307773	9.752495	10.247505	10.0699268	9.939732	30	
59	45	9.692283	10.307717	9.752568	10.247432	10.0699285	9.939715	15	
60	30	9.692339	10.307661	9.752642	10.247358	10.0699303	9.939697	30	
sec.	"	sine.	coscant.	tangent.	cotangent.	secant.	cosec.	"	

1° 58'		LOG. SINES, &c. (1.)						29 deg.	
sec.	min.	sin.	coscant.	tangent.	cotangent.	secant.	cosec.	sec.	min.
0	30	9.602330	10.307661	9.752642	10.247358	10.060303	9.939697	30	60
1	15	9.602396	10.307605	9.752716	10.247284	10.060321	9.939679	15	59
2	30	9.602462	10.307550	9.752789	10.247211	10.060339	9.939661	30	58
3	45	9.602528	10.307494	9.752863	10.247137	10.060357	9.939643	15	57
4	31	9.602594	10.307438	9.752937	10.247063	10.060375	9.939625	29	56
5	15	9.602661	10.307383	9.753010	10.246990	10.060393	9.939607	45	55
6	30	9.602727	10.307328	9.753084	10.246916	10.060411	9.939589	30	54
7	45	9.602793	10.307271	9.753158	10.246842	10.060428	9.939572	15	53
8	32	9.602860	10.307216	9.753231	10.246769	10.060446	9.939554	28	52
9	15	9.602926	10.307160	9.753305	10.246695	10.060464	9.939536	45	51
10	30	9.602992	10.307103	9.753379	10.246621	10.060482	9.939518	30	50
11	45	9.603058	10.307048	9.753452	10.246548	10.060500	9.939500	15	49
12	33	9.603124	10.306992	9.753526	10.246474	10.060518	9.939482	27	48
13	15	9.603190	10.306936	9.753599	10.246401	10.060536	9.939464	45	47
14	30	9.603256	10.306881	9.753673	10.246327	10.060554	9.939446	30	46
15	45	9.603322	10.306825	9.753747	10.246253	10.060572	9.939428	15	45
16	34	9.603388	10.306769	9.753820	10.246180	10.060590	9.939410	26	44
17	15	9.603454	10.306714	9.753894	10.246106	10.060607	9.939393	45	43
18	30	9.603520	10.306658	9.753967	10.246033	10.060625	9.939375	30	42
19	45	9.603586	10.306602	9.754041	10.245959	10.060643	9.939357	15	41
20	35	9.603652	10.306547	9.754115	10.245885	10.060661	9.939339	25	40
21	15	9.603718	10.306491	9.754188	10.245812	10.060679	9.939321	45	39
22	30	9.603784	10.306435	9.754262	10.245738	10.060697	9.939303	30	38
23	45	9.603850	10.306380	9.754335	10.245665	10.060715	9.939285	15	37
24	36	9.603916	10.306324	9.754409	10.245591	10.060733	9.939267	24	36
25	15	9.603982	10.306268	9.754482	10.245518	10.060751	9.939249	45	35
26	30	9.604048	10.306213	9.754556	10.245444	10.060769	9.939231	30	34
27	45	9.604114	10.306157	9.754629	10.245371	10.060787	9.939213	15	33
28	37	9.604180	10.306102	9.754703	10.245297	10.060805	9.939195	23	32
29	15	9.604246	10.306046	9.754776	10.245224	10.060823	9.939177	45	31
30	30	9.604312	10.305991	9.754850	10.245150	10.060841	9.939159	30	30
31	45	9.604378	10.305935	9.754923	10.245077	10.060859	9.939141	15	29
32	38	9.604444	10.305880	9.754997	10.245003	10.060877	9.939123	22	28
33	15	9.604510	10.305824	9.755070	10.244930	10.060895	9.939105	45	27
34	30	9.604576	10.305769	9.755144	10.244856	10.060913	9.939087	30	26
35	45	9.604642	10.305713	9.755217	10.244783	10.060931	9.939069	15	25
36	39	9.604708	10.305658	9.755291	10.244709	10.060949	9.939051	21	24
37	15	9.604774	10.305602	9.755364	10.244636	10.060966	9.939033	45	23
38	30	9.604840	10.305547	9.755438	10.244562	10.060984	9.939015	30	22
39	45	9.604906	10.305491	9.755511	10.244489	10.061002	9.938998	15	21
40	40	9.604972	10.305436	9.755585	10.244415	10.061020	9.938980	20	20
41	15	9.605038	10.305380	9.755658	10.244342	10.061038	9.938962	45	19
42	30	9.605104	10.305325	9.755731	10.244269	10.061056	9.938944	30	18
43	45	9.605170	10.305270	9.755805	10.244195	10.061074	9.938926	15	17
44	41	9.605236	10.305214	9.755878	10.244122	10.061092	9.938908	19	16
45	15	9.605302	10.305159	9.755952	10.244048	10.061110	9.938890	45	15
46	30	9.605368	10.305103	9.756025	10.243975	10.061128	9.938872	30	14
47	45	9.605434	10.305048	9.756098	10.243902	10.061146	9.938854	15	13
48	42	9.605500	10.304993	9.756172	10.243828	10.061164	9.938836	18	12
49	15	9.605566	10.304937	9.756245	10.243755	10.061182	9.938818	45	11
50	30	9.605632	10.304882	9.756319	10.243681	10.061201	9.938799	30	10
51	45	9.605698	10.304827	9.756392	10.243608	10.061219	9.938781	15	9
52	43	9.605764	10.304771	9.756465	10.243535	10.061237	9.938763	17	8
53	15	9.605830	10.304716	9.756539	10.243461	10.061255	9.938745	45	7
54	30	9.605896	10.304661	9.756612	10.243388	10.061273	9.938727	30	6
55	45	9.605962	10.304605	9.756685	10.243315	10.061291	9.938709	15	5
56	44	9.606028	10.304550	9.756759	10.243241	10.061309	9.938691	16	4
57	15	9.606094	10.304495	9.756832	10.243168	10.061327	9.938673	45	3
58	30	9.606160	10.304440	9.756905	10.243095	10.061345	9.938655	30	2
59	45	9.606226	10.304384	9.756979	10.243021	10.061363	9.938637	15	1
60	45	9.606292	10.304329	9.757052	10.242948	10.061381	9.938619	15	0
sec.	min.	sin.	coscant.	tangent.	cotangent.	secant.	cosec.	sec.	min.
4° 1'		LOG. SINES, &c.						60 deg.	

1° 59'.		LOG. SINES, &c. (L)						20 deg.	
sec.	min.	sec.	cosecant.	tangent.	cotangent.	secant.	cosine.	min.	sec.
0	45	9.695671	10.304320	9.757052	10.242948	10.061381	9.938619	15	60
1	15	9.695726	10.304274	9.757125	10.242875	10.061309	9.938681	45	59
2	30	9.695782	10.304219	9.757199	10.242801	10.061417	9.938553	30	58
3	45	9.695837	10.304163	9.757272	10.242728	10.061435	9.938565	15	57
4	46	9.695892	10.304108	9.757345	10.242655	10.061453	9.938547	14	56
5	15	9.695947	10.304053	9.757418	10.242582	10.061471	9.938529	45	55
6	30	9.696003	10.303997	9.757492	10.242508	10.061489	9.938511	30	54
7	45	9.696058	10.303942	9.757565	10.242435	10.061507	9.938493	15	53
8	47	9.696113	10.303887	9.757638	10.242362	10.061525	9.938475	13	52
9	15	9.696168	10.303832	9.757711	10.242289	10.061543	9.938457	45	51
10	30	9.696223	10.303777	9.757785	10.242215	10.061562	9.938438	30	50
11	45	9.696278	10.303722	9.757858	10.242142	10.061580	9.938420	15	49
12	48	9.696333	10.303666	9.757931	10.242069	10.061598	9.938402	12	48
13	15	9.696388	10.303611	9.758004	10.241996	10.061616	9.938384	45	47
14	30	9.696444	10.303556	9.758078	10.241922	10.061634	9.938366	30	46
15	45	9.696499	10.303501	9.758151	10.241849	10.061652	9.938348	15	45
16	49	9.696554	10.303446	9.758224	10.241776	10.061670	9.938330	11	44
17	15	9.696609	10.303391	9.758297	10.241703	10.061688	9.938312	45	43
18	30	9.696664	10.303336	9.758371	10.241629	10.061706	9.938294	30	42
19	45	9.696719	10.303281	9.758444	10.241556	10.061724	9.938276	15	41
20	50	9.696774	10.303226	9.758517	10.241483	10.061742	9.938258	10	40
21	15	9.696830	10.303170	9.758590	10.241410	10.061761	9.938239	45	39
22	30	9.696885	10.303115	9.758663	10.241337	10.061779	9.938221	30	38
23	45	9.696940	10.303060	9.758736	10.241264	10.061797	9.938203	15	37
24	51	9.696995	10.303005	9.758810	10.241190	10.061815	9.938185	9	36
25	15	9.697050	10.302950	9.758883	10.241117	10.061833	9.938167	45	35
26	30	9.697105	10.302895	9.758956	10.241044	10.061851	9.938149	30	34
27	45	9.697160	10.302840	9.759029	10.240971	10.061869	9.938131	15	33
28	52	9.697215	10.302785	9.759102	10.240898	10.061887	9.938113	8	32
29	15	9.697270	10.302730	9.759175	10.240825	10.061905	9.938094	15	31
30	30	9.697325	10.302675	9.759248	10.240752	10.061924	9.938076	30	30
31	45	9.697380	10.302620	9.759322	10.240678	10.061942	9.938058	15	29
32	53	9.697435	10.302565	9.759395	10.240605	10.061960	9.938040	7	28
33	15	9.697490	10.302510	9.759468	10.240532	10.061978	9.938022	45	27
34	30	9.697545	10.302455	9.759541	10.240459	10.061996	9.938004	30	26
35	45	9.697600	10.302400	9.759614	10.240386	10.062015	9.937985	15	25
36	54	9.697654	10.302346	9.759687	10.240313	10.062033	9.937967	6	24
37	15	9.697709	10.302291	9.759760	10.240240	10.062051	9.937949	45	23
38	30	9.697764	10.302236	9.759833	10.240167	10.062069	9.937931	30	22
39	45	9.697819	10.302181	9.759906	10.240094	10.062087	9.937913	15	21
40	55	9.697874	10.302126	9.759979	10.240021	10.062105	9.937895	5	20
41	15	9.697929	10.302071	9.760052	10.239948	10.062124	9.937876	45	19
42	30	9.697984	10.302016	9.760125	10.239875	10.062142	9.937858	30	18
43	45	9.698039	10.301961	9.760199	10.239801	10.062160	9.937840	15	17
44	56	9.698094	10.301906	9.760272	10.239728	10.062178	9.937822	4	16
45	15	9.698148	10.301852	9.760345	10.239655	10.062196	9.937804	45	15
46	30	9.698203	10.301797	9.760418	10.239582	10.062214	9.937786	30	14
47	45	9.698258	10.301742	9.760491	10.239509	10.062233	9.937767	15	13
48	57	9.698313	10.301687	9.760564	10.239436	10.062251	9.937749	3	12
49	15	9.698368	10.301633	9.760637	10.239363	10.062269	9.937731	45	11
50	30	9.698422	10.301578	9.760710	10.239290	10.062287	9.937713	30	10
51	45	9.698477	10.301523	9.760783	10.239217	10.062305	9.937695	15	9
52	58	9.698532	10.301468	9.760856	10.239144	10.062324	9.937676	2	8
53	15	9.698587	10.301413	9.760929	10.239071	10.062342	9.937658	45	7
54	30	9.698642	10.301358	9.761002	10.238998	10.062360	9.937640	30	6
55	45	9.698696	10.301304	9.761075	10.238925	10.062378	9.937622	15	5
56	59	9.698751	10.301249	9.761148	10.238852	10.062397	9.937603	1	4
57	15	9.698806	10.301194	9.761220	10.238780	10.062415	9.937585	45	3
58	30	9.698861	10.301139	9.761293	10.238707	10.062433	9.937567	30	2
59	45	9.698915	10.301085	9.761366	10.238634	10.062451	9.937549	15	1
60	60	9.698970	10.301030	9.761439	10.238561	10.062469	9.937531	0	0
sec.	min.	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	min.	sec.
4° 0'.		LOG. SINES, &c.						60 deg.	

2 ^d 0 ^m .		LOG. SINES, &c. (t.)						30 deg.	
		sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	0	9.688970	10.301030	9.761439	10.238561	10.062469	9.937531	60	60
1	15	9.689025	10.300975	9.761512	10.238488	10.062488	9.937512	45	59
2	30	9.689079	10.300921	9.761585	10.238415	10.062506	9.937494	30	58
3	45	9.689134	10.300866	9.761658	10.238342	10.062524	9.937476	15	57
4	1	9.689189	10.300811	9.761731	10.238269	10.062542	9.937458	59	56
5	15	9.689243	10.300757	9.761804	10.238196	10.062561	9.937439	45	55
6	30	9.689298	10.300702	9.761877	10.238123	10.062579	9.937421	30	54
7	45	9.689353	10.300647	9.761950	10.238050	10.062597	9.937403	15	53
8	2	9.689407	10.300593	9.762023	10.237977	10.062615	9.937385	58	52
9	15	9.689462	10.300538	9.762096	10.237904	10.062634	9.937366	45	51
0	30	9.689517	10.300483	9.762168	10.237832	10.062652	9.937348	30	50
1	45	9.689571	10.300429	9.762241	10.237759	10.062670	9.937330	15	49
2	3	9.689626	10.300374	9.762314	10.237686	10.062688	9.937312	57	48
3	15	9.689680	10.300320	9.762387	10.237613	10.062707	9.937293	45	47
4	30	9.689735	10.300265	9.762460	10.237540	10.062725	9.937275	30	46
5	45	9.689789	10.300211	9.762533	10.237467	10.062743	9.937257	15	45
6	4	9.689844	10.300156	9.762606	10.237394	10.062762	9.937238	56	44
7	15	9.689899	10.300101	9.762678	10.237322	10.062780	9.937220	45	43
8	30	9.689953	10.300047	9.762751	10.237249	10.062798	9.937202	30	42
9	45	9.700008	10.299992	9.762824	10.237176	10.062816	9.937184	15	41
0	5	9.700062	10.299938	9.762897	10.237103	10.062835	9.937165	55	40
1	15	9.700117	10.299883	9.762970	10.237030	10.062853	9.937147	45	39
2	30	9.700171	10.299829	9.763042	10.236958	10.062871	9.937129	30	38
3	45	9.700226	10.299774	9.763115	10.236885	10.062890	9.937110	15	37
4	6	9.700280	10.299720	9.763188	10.236812	10.062908	9.937092	54	36
5	15	9.700335	10.299665	9.763261	10.236739	10.062926	9.937074	45	35
6	30	9.700389	10.299611	9.763334	10.236666	10.062945	9.937055	30	34
7	45	9.700444	10.299556	9.763406	10.236594	10.062963	9.937037	15	33
8	7	9.700498	10.299502	9.763479	10.236521	10.062981	9.937019	53	32
9	15	9.700552	10.299448	9.763552	10.236448	10.063000	9.937000	45	31
0	30	9.700607	10.299393	9.763625	10.236375	10.063018	9.936982	30	30
1	45	9.700661	10.299339	9.763697	10.236303	10.063036	9.936964	15	29
2	8	9.700716	10.299284	9.763770	10.236230	10.063054	9.936946	52	28
3	15	9.700770	10.299230	9.763843	10.236157	10.063073	9.936927	45	27
4	30	9.700825	10.299175	9.763916	10.236084	10.063091	9.936909	30	26
5	45	9.700879	10.299121	9.763988	10.236012	10.063109	9.936891	15	25
6	9	9.700933	10.299067	9.764061	10.235939	10.063128	9.936872	51	24
7	15	9.700988	10.299012	9.764134	10.235866	10.063146	9.936854	45	23
8	30	9.701042	10.298958	9.764207	10.235793	10.063165	9.936835	30	22
9	45	9.701096	10.298904	9.764279	10.235721	10.063183	9.936817	15	21
0	10	9.701151	10.298849	9.764352	10.235648	10.063201	9.936799	50	20
1	15	9.701205	10.298795	9.764425	10.235575	10.063220	9.936780	45	19
2	30	9.701259	10.298741	9.764497	10.235503	10.063238	9.936762	30	18
3	45	9.701314	10.298686	9.764570	10.235430	10.063256	9.936744	15	17
4	11	9.701368	10.298632	9.764643	10.235357	10.063275	9.936725	49	16
5	15	9.701422	10.298578	9.764715	10.235285	10.063293	9.936707	45	15
6	30	9.701477	10.298523	9.764788	10.235212	10.063311	9.936689	30	14
7	45	9.701531	10.298469	9.764861	10.235139	10.063330	9.936670	15	13
8	12	9.701585	10.298415	9.764933	10.235067	10.063348	9.936652	48	12
9	15	9.701639	10.298361	9.765006	10.234994	10.063367	9.936633	45	11
0	30	9.701694	10.298306	9.765079	10.234921	10.063385	9.936615	30	10
1	45	9.701748	10.298252	9.765151	10.234849	10.063403	9.936597	15	9
2	13	9.701802	10.298198	9.765224	10.234776	10.063422	9.936578	47	8
3	15	9.701856	10.298144	9.765296	10.234704	10.063440	9.936560	45	7
4	30	9.701911	10.298089	9.765369	10.234631	10.063459	9.936541	30	6
5	45	9.701965	10.298035	9.765442	10.234558	10.063477	9.936523	15	5
6	14	9.702019	10.297981	9.765514	10.234486	10.063495	9.936505	46	4
7	15	9.702073	10.297927	9.765587	10.234413	10.063514	9.936486	45	3
8	30	9.702127	10.297873	9.765659	10.234341	10.063532	9.936468	30	2
9	45	9.702182	10.297818	9.765732	10.234268	10.063551	9.936449	15	1
0	15	9.702236	10.297764	9.765805	10.234195	10.063569	9.936431	45	0
		cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
3 ^d 59 ^m .		LOG. SINES, &c.						59 deg.	

2 ^d 1 ^m .		LOG. SINES, &c. (t.)						30 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
9	15	9.702236	10.297764	9.765805	10.234195	10.063569	9.936431	45	60
1	15	9.702290	10.297710	9.765877	10.234123	10.063587	9.936413	45	59
2	30	9.702344	10.297656	9.765950	10.234050	10.063606	9.936394	30	58
3	45	9.702398	10.297602	9.766022	10.233978	10.063624	9.936376	15	57
4	16	9.702452	10.297548	9.766095	10.233905	10.063643	9.936357	44	56
5	15	9.702506	10.297494	9.766167	10.233833	10.063661	9.936339	45	55
6	30	9.702560	10.297440	9.766240	10.233760	10.063680	9.936320	30	54
7	45	9.702615	10.297385	9.766313	10.233687	10.063698	9.936302	15	53
8	17	9.702669	10.297331	9.766385	10.233615	10.063716	9.936284	43	52
9	15	9.702723	10.297277	9.766458	10.233542	10.063735	9.936265	45	51
10	30	9.702777	10.297223	9.766530	10.233470	10.063753	9.936247	30	50
11	45	9.702831	10.297169	9.766603	10.233397	10.063772	9.936228	15	49
12	18	9.702885	10.297115	9.766675	10.233325	10.063790	9.936210	42	48
13	15	9.702939	10.297061	9.766748	10.233252	10.063809	9.936191	45	47
14	30	9.702993	10.297007	9.766820	10.233180	10.063827	9.936173	30	46
15	45	9.703047	10.296953	9.766893	10.233107	10.063846	9.936154	15	45
16	19	9.703101	10.296899	9.766965	10.233035	10.063864	9.936136	41	44
17	15	9.703155	10.296845	9.767038	10.232962	10.063883	9.936117	45	43
18	30	9.703209	10.296791	9.767110	10.232890	10.063901	9.936099	30	42
19	45	9.703263	10.296737	9.767182	10.232818	10.063920	9.936080	15	41
20	20	9.703317	10.296683	9.767255	10.232745	10.063938	9.936062	40	40
21	15	9.703371	10.296629	9.767327	10.232673	10.063956	9.936044	45	39
22	30	9.703425	10.296575	9.767400	10.232600	10.063975	9.936025	30	38
23	45	9.703479	10.296521	9.767472	10.232528	10.063993	9.936007	15	37
24	21	9.703533	10.296467	9.767545	10.232455	10.064012	9.935988	39	36
25	15	9.703587	10.296413	9.767617	10.232383	10.064030	9.935970	45	35
26	30	9.703641	10.296359	9.767690	10.232310	10.064049	9.935951	30	34
27	45	9.703695	10.296305	9.767762	10.232238	10.064067	9.935933	15	33
28	22	9.703749	10.296251	9.767834	10.232166	10.064086	9.935914	38	32
29	15	9.703802	10.296198	9.767907	10.232093	10.064104	9.935896	45	31
30	30	9.703856	10.296144	9.767979	10.232021	10.064123	9.935877	30	30
31	45	9.703910	10.296090	9.768052	10.231948	10.064141	9.935859	15	29
32	23	9.703964	10.296036	9.768124	10.231876	10.064160	9.935840	37	28
33	15	9.704018	10.295982	9.768196	10.231804	10.064178	9.935822	45	27
34	30	9.704072	10.295928	9.768269	10.231731	10.064197	9.935803	30	26
35	45	9.704126	10.295874	9.768341	10.231659	10.064216	9.935784	15	25
36	24	9.704179	10.295821	9.768413	10.231587	10.064234	9.935766	36	24
37	15	9.704233	10.295767	9.768486	10.231514	10.064253	9.935747	45	23
38	30	9.704287	10.295713	9.768558	10.231442	10.064271	9.935729	30	22
39	45	9.704341	10.295659	9.768631	10.231369	10.064290	9.935710	15	21
40	25	9.704395	10.295605	9.768703	10.231297	10.064308	9.935692	35	20
41	15	9.704448	10.295552	9.768775	10.231225	10.064327	9.935673	45	19
42	30	9.704502	10.295498	9.768848	10.231152	10.064345	9.935655	30	18
43	45	9.704556	10.295444	9.768920	10.231080	10.064364	9.935636	15	17
44	26	9.704610	10.295390	9.768992	10.231008	10.064382	9.935618	34	16
45	15	9.704664	10.295336	9.769064	10.230936	10.064401	9.935599	45	15
46	30	9.704717	10.295283	9.769137	10.230863	10.064420	9.935580	30	14
47	45	9.704771	10.295229	9.769209	10.230791	10.064438	9.935562	15	13
48	27	9.704825	10.295175	9.769281	10.230719	10.064457	9.935543	33	12
49	15	9.704878	10.295122	9.769354	10.230646	10.064475	9.935525	45	11
50	30	9.704932	10.295068	9.769426	10.230574	10.064494	9.935506	30	10
51	45	9.704986	10.295014	9.769498	10.230502	10.064512	9.935488	15	9
52	28	9.705040	10.294960	9.769570	10.230430	10.064531	9.935469	32	8
53	15	9.705093	10.294907	9.769643	10.230357	10.064550	9.935450	45	7
54	30	9.705147	10.294853	9.769715	10.230285	10.064568	9.935432	30	6
55	45	9.705201	10.294799	9.769787	10.230213	10.064587	9.935413	15	5
56	29	9.705254	10.294746	9.769860	10.230140	10.064605	9.935395	31	4
57	15	9.705308	10.294692	9.769932	10.230068	10.064624	9.935376	45	3
58	30	9.705362	10.294638	9.770004	10.229996	10.064642	9.935358	30	2
59	45	9.705415	10.294585	9.770076	10.229924	10.064661	9.935339	15	1
60	30	9.705469	10.294531	9.770148	10.229852	10.064680	9.935320	30	0
csc.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
3 ^d 58.		LOG. SINES, &c.						59 deg.	

30 deg.		LOG. SINES, &c. (1.)						30 deg.	
sec.	min.	secant.	tangent.	cotangent.	secant.	cosine.	sec.	min.	sec.
1	30	9.705489	10.294331	9.770148	10.229852	10.064690	9.935320	30	60
2	■	9.705523	10.294478	9.770221	10.229779	10.064698	9.935302	45	59
3	45	9.705576	10.294424	9.770203	10.229707	10.064717	9.935283	30	58
4	■	9.705600	10.294370	9.770363	10.229635	10.064735	9.935265	■	57
5	31	9.705607	10.294317	9.770437	10.229563	10.064754	9.935246	29	56
6	15	9.705737	10.294263	9.770509	10.229491	10.064773	9.935227	45	55
7	30	9.705790	10.294210	9.770582	10.229418	10.064791	9.935209	■	■
8	45	9.705844	10.294156	9.770654	10.229346	10.064810	9.935190	15	■
9	■	9.705897	10.294103	9.770726	10.229274	10.064829	9.935171	28	52
10	15	9.705951	10.294049	9.770798	10.229202	10.064847	9.935153	45	51
11	■	9.706006	10.293995	9.770870	10.229130	10.064866	9.935134	30	50
12	45	9.706058	10.293942	9.770943	10.229057	10.064884	9.935116	15	49
13	33	9.706112	■	9.771015	10.228985	10.064903	9.935097	27	48
14	15	9.706165	10.293885	9.771087	10.228913	10.064922	9.935078	45	47
15	■	9.706219	10.293831	9.771159	10.228841	10.064940	9.935060	30	46
16	45	9.706272	■	9.771231	10.228769	10.064959	9.935041	15	45
17	34	9.706326	10.293774	9.771303	10.228697	10.064978	9.935022	26	■
18	15	9.706379	10.293721	9.771375	10.228625	10.064996	9.935004	45	43
19	30	9.706432	10.293668	9.771447	10.228553	10.065015	9.934985	■	42
20	45	9.706486	10.293614	9.771520	10.228480	10.065034	9.934966	15	41
21	■	9.706539	10.293561	9.771592	10.228408	10.065052	9.934948	25	■
22	15	9.706592	10.293507	9.771664	10.228336	10.065071	9.934929	45	39
23	30	9.706646	10.293454	9.771736	10.228264	10.065090	9.934910	■	38
24	45	9.706700	10.293400	9.771808	10.228192	10.065108	9.934892	15	37
25	■	9.706753	10.293347	9.771880	10.228120	10.065127	9.934873	24	36
26	15	9.706806	10.293294	9.771952	10.228048	10.065146	9.934854	45	35
27	30	9.706860	10.293240	9.772024	10.227976	10.065164	9.934836	■	34
28	45	9.706913	10.293187	9.772096	10.227904	10.065183	9.934817	15	33
29	■	9.706967	10.293133	9.772168	10.227832	10.065202	9.934798	23	32
30	37	9.707020	10.293080	9.772240	10.227760	10.065220	9.934780	45	31
31	15	9.707073	10.293027	9.772312	10.227688	10.065239	9.934761	30	30
32	■	9.707127	10.292973	9.772384	10.227616	10.065258	9.934742	15	29
33	45	9.707180	10.292920	9.772457	10.227543	10.065277	9.934723	22	28
34	■	9.707233	10.292867	9.772529	10.227471	10.065295	9.934705	■	27
35	15	9.707287	10.292813	9.772601	10.227399	10.065314	9.934686	30	26
36	30	9.707340	10.292760	9.772673	10.227327	10.065333	9.934667	15	25
37	45	9.707393	10.292707	9.772745	10.227255	10.065351	9.934648	21	24
38	■	9.707447	10.292653	9.772817	10.227183	10.065370	■	45	23
39	15	9.707500	10.292600	9.772889	10.227111	10.065389	9.934611	30	22
40	30	9.707553	10.292547	9.772961	10.227039	10.065408	9.934592	15	21
41	45	9.707606	10.292494	9.773033	10.226967	10.065426	9.934574	20	20
42	■	9.707660	10.292440	9.773105	10.226895	10.065445	9.934555	45	19
43	15	9.707713	10.292387	9.773177	10.226823	10.065464	9.934536	30	18
44	30	9.707766	10.292334	9.773249	10.226751	10.065482	9.934518	15	17
45	45	9.707819	10.292281	9.773321	10.226679	10.065501	9.934499	19	16
46	■	9.707873	10.292227	9.773393	10.226607	10.065520	9.934480	45	15
47	15	9.707926	10.292174	9.773464	10.226535	10.065539	9.934461	30	14
48	30	9.707979	10.292121	9.773536	10.226464	10.065557	9.934443	15	13
49	45	9.708032	10.292068	9.773608	10.226392	10.065576	9.934424	18	12
50	■	9.708086	10.292014	9.773680	10.226320	10.065595	9.934405	45	11
51	15	9.708139	10.291961	9.773752	10.226248	10.065614	9.934386	30	10
52	30	9.708192	10.291908	9.773824	10.226176	10.065632	9.934368	15	9
53	45	9.708245	10.291855	9.773896	10.226104	10.065651	9.934349	17	8
54	■	9.708298	10.291802	9.773968	10.226032	10.065670	9.934330	45	7
55	15	9.708351	10.291749	9.774040	10.225960	10.065689	9.934311	30	6
56	30	9.708404	10.291696	9.774112	10.225888	10.065708	9.934292	15	5
57	45	9.708457	10.291643	9.774184	10.225816	10.065726	9.934274	16	4
58	■	9.708511	10.291589	9.774256	10.225744	10.065745	9.934255	45	3
59	15	9.708564	10.291536	9.774328	10.225672	10.065764	9.934236	30	2
60	30	9.708617	10.291483	9.774399	10.225601	10.065783	9.934217	15	1
61	45	9.708670	10.291430	9.774471	10.225529	10.065801	9.934198	15	0
62	■	9.708724	10.291376	9.774543	10.225457	10.065820	9.934179	■	■

3° 57'.

LOG. SINES, &c.

59 deg.

2° 3'		LOG. SINES, &c. (L.)						30 deg.	
sec.	min.	sine.	coscant.	tangent.	cotangent.	secant.	cosec.	sec.	min.
0	45	9.708670	10.201330	9.774471	10.225529	10.065801	9.934199	15	00
1	15	9.708723	10.291277	9.774543	10.225457	10.065820	9.934180	45	50
2	30	9.708776	10.291224	9.774615	10.225385	10.065839	9.934161	30	58
3	45	9.708829	10.291171	9.774687	10.225313	10.065858	9.934142	15	57
4	46	9.708882	10.291118	9.774759	10.225241	10.065877	9.934123	14	56
5	15	9.708935	10.291065	9.774831	10.225169	10.065895	9.934105	45	45
6	30	9.708988	10.291012	9.774902	10.225098	10.065914	9.934086	30	54
7	45	9.709041	10.290959	9.774974	10.225026	10.065933	9.934067	15	53
8	47	9.709094	10.290906	9.775046	10.224954	10.065952	9.934048	13	52
9	15	9.709147	10.290853	9.775118	10.224882	10.065971	9.934029	45	51
10	30	9.709200	10.290800	9.775190	10.224810	10.065990	9.934010	30	50
11	45	9.709253	10.290747	9.775262	10.224738	10.066008	9.933992	15	49
12	48	9.709306	10.290694	9.775333	10.224667	10.066027	9.933973	12	48
13	15	9.709359	10.290641	9.775405	10.224595	10.066046	9.933954	45	47
14	30	9.709412	10.290588	9.775477	10.224523	10.066065	9.933935	30	46
15	45	9.709465	10.290535	9.775549	10.224451	10.066084	9.933916	15	45
16	49	9.709518	10.290482	9.775621	10.224379	10.066102	9.933898	11	44
17	15	9.709571	10.290429	9.775692	10.224308	10.066121	9.933879	45	43
18	30	9.709624	10.290376	9.775764	10.224236	10.066140	9.933860	30	42
19	45	9.709677	10.290323	9.775836	10.224164	10.066159	9.933841	15	41
20	50	9.709730	10.290270	9.775908	10.224092	10.066178	9.933822	10	40
21	15	9.709783	10.290217	9.775979	10.224021	10.066197	9.933803	45	39
22	30	9.709836	10.290164	9.776051	10.223949	10.066216	9.933784	30	38
23	45	9.709889	10.290111	9.776123	10.223877	10.066234	9.933766	15	37
24	51	9.709941	10.290059	9.776195	10.223805	10.066253	9.933747	9	36
25	15	9.709994	10.290006	9.776266	10.223734	10.066271	9.933729	45	35
26	30	9.710047	10.289953	9.776338	10.223662	10.066290	9.933710	30	34
27	45	9.710100	10.289900	9.776410	10.223590	10.066309	9.933691	15	33
28	52	9.710153	10.289847	9.776482	10.223518	10.066329	9.933672	8	32
29	15	9.710206	10.289794	9.776553	10.223447	10.066347	9.933653	45	31
30	30	9.710259	10.289741	9.776625	10.223375	10.066366	9.933634	30	30
31	45	9.710311	10.289688	9.776697	10.223303	10.066385	9.933615	15	29
32	53	9.710364	10.289636	9.776768	10.223232	10.066404	9.933596	7	28
33	15	9.710417	10.289583	9.776840	10.223160	10.066423	9.933577	45	27
34	30	9.710470	10.289530	9.776912	10.223088	10.066442	9.933558	30	26
35	45	9.710523	10.289477	9.776983	10.223017	10.066461	9.933539	15	25
36	54	9.710575	10.289425	9.777055	10.222945	10.066480	9.933520	6	24
37	15	9.710628	10.289372	9.777127	10.222873	10.066499	9.933501	45	23
38	30	9.710681	10.289319	9.777198	10.222802	10.066518	9.933482	30	22
39	45	9.710734	10.289266	9.777270	10.222730	10.066537	9.933463	15	21
40	55	9.710786	10.289214	9.777342	10.222658	10.066556	9.933444	5	20
41	15	9.710839	10.289161	9.777413	10.222587	10.066574	9.933426	45	19
42	30	9.710892	10.289108	9.777485	10.222515	10.066593	9.933407	30	18
43	45	9.710944	10.289056	9.777557	10.222443	10.066612	9.933388	15	17
44	56	9.710997	10.289003	9.777628	10.222372	10.066631	9.933369	4	16
45	15	9.711050	10.288950	9.777700	10.222300	10.066650	9.933350	45	15
46	30	9.711103	10.288897	9.777772	10.222228	10.066669	9.933331	30	14
47	45	9.711155	10.288845	9.777843	10.222157	10.066688	9.933312	15	13
48	57	9.711208	10.288792	9.777915	10.222085	10.066707	9.933293	3	12
49	15	9.711261	10.288739	9.777986	10.222014	10.066726	9.933274	45	11
50	30	9.711313	10.288687	9.778058	10.221942	10.066745	9.933255	30	10
51	45	9.711366	10.288634	9.778130	10.221870	10.066764	9.933236	15	9
52	58	9.711419	10.288581	9.778201	10.221799	10.066783	9.933217	2	8
53	15	9.711471	10.288529	9.778273	10.221727	10.066802	9.933198	45	7
54	30	9.711524	10.288476	9.778344	10.221655	10.066821	9.933179	30	6
55	45	9.711576	10.288424	9.778416	10.221584	10.066840	9.933160	15	5
56	59	9.711629	10.288371	9.778487	10.221513	10.066859	9.933141	1	4
57	15	9.711682	10.288318	9.778559	10.221441	10.066878	9.933122	45	3
58	30	9.711734	10.288266	9.778631	10.221369	10.066897	9.933103	30	2
59	45	9.711787	10.288213	9.778702	10.221298	10.066915	9.933084	15	1
60	60	9.711839	10.288161	9.778774	10.221226	10.066934	9.933065	0	0
sec.	min.	sine.	coscant.	tangent.	cotangent.	secant.	cosec.	sec.	min.
3° 50'		LOG. SINES, &c.						59 deg.	

2° 4'.		LOG. SINES, &c. (L.)					31 deg	
	min.	coscant.	imagant.	colangent.	secant.	cosec.		sec.
0	9.711839	10.288161	9.778774	10.221226	10.066934	9.933066	60	60
15	9.711892	10.288108	9.778845	10.221155	10.066953	9.933047	45	59
30	9.711944	10.288056	9.778917	10.221083	10.066972	9.933028	30	58
45	9.711997	10.288003	9.778988	10.221012	10.066991	9.933009	15	57
1	9.712049	10.287951	9.779060	10.220941	10.067010	9.932990	59	56
15	9.712102	10.287898	9.779131	10.220869	10.067029	9.932971	45	55
30	9.712155	10.287846	9.779203	10.220797	10.067048	9.932952	30	54
45	9.712207	10.287793	9.779274	10.220726	10.067067	9.932933	15	53
2	9.712260	10.287740	9.779346	10.220654	10.067086	9.932914	58	52
15	9.712312	10.287688	9.779417	10.220583	10.067105	9.932895	45	51
30	9.712364	10.287636	9.779489	10.220511	10.067124	9.932876	30	50
45	9.712417	10.287583	9.779560	10.220440	10.067143	9.932857	15	49
3	9.712469	10.287531	9.779632	10.220368	10.067162	9.932838	57	48
15	9.712522	10.287478	9.779703	10.220297	10.067181	9.932819	45	47
30	9.712574	10.287426	9.779775	10.220226	10.067200	9.932800	30	46
45	9.712627	10.287373	9.779846	10.220154	10.067219	9.932781	15	45
4	9.712679	10.287321	9.779918	10.220082	10.067238	9.932762	56	44
15	9.712732	10.287268	9.779989	10.220011	10.067258	9.932743	45	43
30	9.712784	10.287216	9.780061	10.219939	10.067277	9.932724	30	42
45	9.712836	10.287164	9.780132	10.219868	10.067296	9.932704	15	41
5	9.712889	10.287111	9.780203	10.219797	10.067315	9.932685	55	40
15	9.712941	10.287059	9.780275	10.219725	10.067334	9.932666	45	39
30	9.712994	10.287006	9.780346	10.219654	10.067353	9.932647	30	38
45	9.713046	10.286954	9.780418	10.219582	10.067372	9.932628	15	37
6	9.713098	10.286902	9.780489	10.219511	10.067391	9.932609	54	36
15	9.713151	10.286849	9.780560	10.219440	10.067410	9.932590	45	35
30	9.713203	10.286797	9.780632	10.219368	10.067429	9.932571	30	34
45	9.713255	10.286745	9.780703	10.219297	10.067448	9.932552	15	33
7	9.713308	10.286692	9.780775	10.219225	10.067467	9.932533	53	32
15	9.713360	10.286640	9.780846	10.219154	10.067486	9.932514	45	31
30	9.713412	10.286588	9.780917	10.219083	10.067505	9.932495	30	30
45	9.713465	10.286535	9.780989	10.219011	10.067524	9.932476	15	29
8	9.713517	10.286483	9.781060	10.218940	10.067543	9.932457	52	28
15	9.713569	10.286431	9.781131	10.218869	10.067562	9.932438	45	27
30	9.713621	10.286379	9.781203	10.218797	10.067581	9.932419	30	26
45	9.713674	10.286326	9.781274	10.218726	10.067601	9.932399	15	25
9	9.713726	10.286274	9.781346	10.218654	10.067620	9.932380	51	24
15	9.713778	10.286222	9.781417	10.218583	10.067639	9.932361	45	23
30	9.713830	10.286170	9.781488	10.218512	10.067658	9.932342	30	22
45	9.713883	10.286117	9.781560	10.218440	10.067677	9.932323	15	21
10	9.713935	10.286065	9.781631	10.218369	10.067696	9.932304	50	20
15	9.713987	10.286013	9.781702	10.218298	10.067715	9.932285	45	19
30	9.714039	10.285961	9.781773	10.218227	10.067734	9.932266	30	18
45	9.714091	10.285909	9.781845	10.218155	10.067753	9.932247	15	17
11	9.714144	10.285856	9.781916	10.218084	10.067772	9.932228	49	16
15	9.714196	10.285804	9.781987	10.218013	10.067791	9.932209	45	15
30	9.714248	10.285752	9.782059	10.217941	10.067811	9.932189	30	14
45	9.714300	10.285700	9.782130	10.217870	10.067830	9.932170	15	13
12	9.714352	10.285648	9.782201	10.217799	10.067849	9.932151	48	12
15	9.714404	10.285596	9.782272	10.217727	10.067868	9.932132	45	11
30	9.714457	10.285543	9.782344	10.217656	10.067887	9.932113	30	10
45	9.714509	10.285491	9.782415	10.217585	10.067906	9.932094	15	9
13	9.714561	10.285439	9.782486	10.217514	10.067925	9.932075	47	8
15	9.714613	10.285387	9.782558	10.217442	10.067944	9.932056	45	7
30	9.714665	10.285335	9.782629	10.217371	10.067964	9.932037	30	6
45	9.714717	10.285283	9.782700	10.217300	10.067983	9.932017	15	5
14	9.714769	10.285231	9.782771	10.217229	10.068002	9.931998	46	4
15	9.714821	10.285179	9.782843	10.217157	10.068021	9.931979	45	3
30	9.714873	10.285127	9.782914	10.217086	10.068040	9.931960	30	2
45	9.714925	10.285075	9.782985	10.217015	10.068060	9.931940	15	1
15	9.714978	10.285022	9.783056	10.216944	10.068079	9.931921	45	0
cossec.		secant.	colangent.	imagant.	cosecant.	sin.		sec.
3° 55'.		LOG. SINES, &c.					58 deg	

3° 5'		LOG. SINES, &c. (t.)						31 deg.	
sec.	"	sine.	coscord.	tangent.	cotangent.	secant.	cosec.	"	sec.
0	15	9.714978	10.285022	9.783066	10.216944	10.068079	9.931921	45	60
1	15	9.715030	10.284970	9.783127	10.216873	10.068098	9.931901	45	59
2	30	9.715082	10.284918	9.783189	10.216801	10.068117	9.931883	30	58
3	45	9.715134	10.284866	9.783270	10.216730	10.068136	9.931864	15	57
4	16	9.715186	10.284814	9.783341	10.216659	10.068155	9.931845	44	56
5	15	9.715238	10.284762	9.783412	10.216588	10.068175	9.931826	30	55
6	30	9.715290	10.284710	9.783483	10.216517	10.068194	9.931807	15	54
7	45	9.715342	10.284658	9.783555	10.216445	10.068213	9.931787	43	53
8	17	9.715394	10.284606	9.783626	10.216374	10.068232	9.931768	45	52
9	15	9.715446	10.284554	9.783697	10.216303	10.068251	9.931749	30	51
10	30	9.715498	10.284502	9.783768	10.216232	10.068271	9.931729	15	50
11	45	9.715550	10.284450	9.783839	10.216161	10.068290	9.931710	42	49
12	18	9.715601	10.284399	9.783910	10.216090	10.068309	9.931691	45	48
13	15	9.715653	10.284347	9.783981	10.216019	10.068328	9.931672	30	47
14	30	9.715705	10.284295	9.784053	10.215947	10.068347	9.931653	15	46
15	45	9.715757	10.284243	9.784124	10.215876	10.068367	9.931634	41	45
16	19	9.715809	10.284191	9.784195	10.215805	10.068386	9.931614	45	44
17	15	9.715861	10.284139	9.784266	10.215734	10.068405	9.931595	30	43
18	30	9.715913	10.284087	9.784337	10.215663	10.068424	9.931576	15	42
19	45	9.715965	10.284035	9.784408	10.215592	10.068443	9.931557	40	41
20	20	9.716017	10.283983	9.784479	10.215521	10.068462	9.931537	45	40
21	15	9.716069	10.283931	9.784550	10.215450	10.068482	9.931518	30	39
22	30	9.716120	10.283880	9.784622	10.215378	10.068501	9.931499	15	38
23	45	9.716172	10.283828	9.784693	10.215307	10.068520	9.931480	40	37
24	21	9.716224	10.283776	9.784764	10.215236	10.068540	9.931461	45	36
25	15	9.716276	10.283724	9.784835	10.215165	10.068559	9.931441	30	35
26	30	9.716328	10.283672	9.784906	10.215094	10.068578	9.931422	15	34
27	45	9.716380	10.283620	9.784977	10.215023	10.068597	9.931403	38	33
28	22	9.716432	10.283568	9.785048	10.214952	10.068617	9.931383	45	32
29	15	9.716483	10.283517	9.785119	10.214881	10.068636	9.931364	30	31
30	30	9.716535	10.283465	9.785190	10.214810	10.068655	9.931345	15	30
31	45	9.716587	10.283413	9.785261	10.214739	10.068674	9.931326	37	29
32	23	9.716639	10.283361	9.785332	10.214668	10.068694	9.931306	45	28
33	15	9.716690	10.283310	9.785403	10.214597	10.068713	9.931287	30	27
34	30	9.716742	10.283258	9.785474	10.214526	10.068732	9.931268	15	26
35	45	9.716794	10.283206	9.785545	10.214455	10.068751	9.931249	36	25
36	24	9.716846	10.283154	9.785616	10.214384	10.068771	9.931229	45	24
37	15	9.716897	10.283103	9.785687	10.214313	10.068790	9.931210	30	23
38	30	9.716949	10.283051	9.785758	10.214242	10.068809	9.931191	15	22
39	45	9.717001	10.282999	9.785829	10.214171	10.068829	9.931171	35	21
40	25	9.717053	10.282947	9.785900	10.214100	10.068848	9.931152	45	20
41	15	9.717104	10.282895	9.785971	10.214029	10.068867	9.931133	30	19
42	30	9.717156	10.282844	9.786042	10.213958	10.068886	9.931114	15	18
43	45	9.717208	10.282792	9.786113	10.213887	10.068906	9.931094	34	17
44	26	9.717259	10.282741	9.786184	10.213816	10.068925	9.931075	45	16
45	15	9.717311	10.282689	9.786255	10.213745	10.068944	9.931056	30	15
46	30	9.717363	10.282637	9.786326	10.213674	10.068964	9.931036	15	14
47	45	9.717414	10.282586	9.786397	10.213603	10.068983	9.931017	33	13
48	27	9.717466	10.282534	9.786468	10.213532	10.069002	9.931000	45	12
49	15	9.717518	10.282482	9.786539	10.213461	10.069022	9.930978	30	11
50	30	9.717569	10.282431	9.786610	10.213390	10.069041	9.930959	15	10
51	45	9.717621	10.282379	9.786681	10.213319	10.069060	9.930940	32	9
52	28	9.717672	10.282328	9.786752	10.213248	10.069079	9.930920	45	8
53	15	9.717724	10.282276	9.786823	10.213177	10.069099	9.930901	30	7
54	30	9.717776	10.282224	9.786894	10.213106	10.069118	9.930882	15	6
55	45	9.717827	10.282173	9.786965	10.213035	10.069138	9.930862	31	5
56	29	9.717879	10.282121	9.787036	10.212964	10.069157	9.930843	45	4
57	15	9.717930	10.282070	9.787107	10.212893	10.069176	9.930824	30	3
58	30	9.717982	10.282018	9.787177	10.212823	10.069196	9.930805	15	2
59	45	9.718034	10.281966	9.787248	10.212752	10.069215	9.930786	30	1
60	30	9.718085	10.281915	9.787319	10.212681	10.069234	9.930766	45	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
3° 54'		LOG. SINES, &c.						55 deg.	

2° 6'		LOG. SINES, &c. (L.)						31 deg.	
sec.	sin.	coscant.	tangent.	cotangent.	secant.	cosec.	sec.	sin.	sec.
0	30	9.718065	10.281915	9.787319	10.212681	11.088234	9.930768	30	60
1	15	9.718137	10.281863	9.787390	10.212610	10.089254	9.930746	■	59
2	30	9.718189	10.281812	9.787461	10.212539	10.089273	9.930727	■	58
3	45	9.718240	10.281760	9.787532	10.212468	10.089292	9.930708	■	57
4	31	9.718291	10.281709	9.787603	10.212397	11.089312	9.930689	29	56
5	15	9.718343	10.281657	9.787674	10.212326	10.089331	9.930669	45	55
6	30	9.718394	10.281606	9.787745	10.212255	10.089350	9.930650	30	54
7	■	9.718446	10.281554	9.787815	10.212185	10.089370	9.930630	15	53
8	32	9.718497	10.281503	9.787886	10.212114	10.089389	9.930611	28	52
9	15	9.718549	10.281451	9.787957	10.212043	10.089409	9.930591	45	51
10	30	9.718600	10.281400	9.788028	10.211972	10.089428	9.930572	30	50
■	■	9.718651	10.281349	9.788099	10.211901	10.089447	9.930553	15	49
12	33	9.718703	10.281297	9.788170	10.211830	10.089467	9.930533	27	48
13	15	9.718754	10.281246	9.788240	10.211760	11.089486	9.930514	45	47
14	■	9.718806	10.281194	9.788311	10.211689	10.089506	9.930494	30	46
15	45	9.718857	10.281143	9.788382	10.211618	10.089525	9.930475	15	45
16	34	9.718909	10.281091	9.788453	10.211547	10.089544	9.930456	26	44
17	■	9.718960	10.281040	9.788524	10.211476	10.089564	9.930436	45	43
18	30	9.719011	10.280989	9.788594	10.211406	10.089583	9.930417	30	42
19	45	9.719063	10.280937	9.788665	10.211335	10.089603	9.930397	15	41
20	35	9.719114	10.280886	9.788736	10.211264	10.089622	9.930378	25	40
21	15	9.719166	10.280834	9.788807	10.211193	10.089641	9.930359	45	39
22	30	9.719217	10.280783	9.788878	10.211122	10.089661	9.930339	30	38
23	45	9.719268	10.280732	9.788948	10.211052	10.089680	9.930320	15	37
24	36	9.719320	10.280680	9.789019	10.210981	10.089700	9.930300	24	36
25	15	9.719371	10.280629	9.789090	10.210910	10.089719	9.930281	45	35
26	30	9.719422	10.280578	9.789161	10.210839	10.089739	9.930261	30	34
27	45	9.719474	10.280526	9.789231	10.210769	10.089758	9.930242	15	33
28	37	9.719525	10.280475	9.789302	10.210698	10.089777	9.930223	23	■
29	15	9.719576	10.280424	9.789373	10.210627	10.089797	9.930203	45	31
30	30	9.719627	10.280373	9.789444	10.210556	10.089816	9.930184	30	30
31	45	9.719679	10.280321	9.789514	10.210486	10.089836	9.930164	15	■
32	38	9.719730	10.280270	9.789585	10.210415	10.089855	9.930145	22	28
33	15	9.719781	10.280219	9.789656	10.210344	10.089875	9.930125	45	27
34	30	9.719833	10.280167	9.789727	10.210273	10.089894	9.930106	30	26
35	45	9.719884	10.280116	9.789797	10.210203	10.089914	9.930086	15	25
36	39	9.719935	10.280065	9.789868	10.210132	10.089933	9.930067	21	24
37	15	9.719986	10.280014	9.789939	10.210061	10.089953	9.930047	45	23
38	30	9.720037	10.279963	9.790009	10.209991	10.089972	9.930028	30	22
■	45	9.720089	10.279911	9.790080	10.209920	10.089991	9.930009	15	21
40	40	9.720140	10.279860	9.790151	10.209849	10.070011	9.929989	20	20
41	15	9.720191	10.279809	9.790221	10.209779	10.070030	9.929970	45	19
42	30	9.720242	10.279758	9.790292	10.209708	10.070050	9.929950	30	18
43	45	9.720293	10.279707	9.790363	10.209637	10.070069	9.929931	15	17
44	41	9.720345	10.279655	9.790433	10.209567	10.070089	9.929911	19	16
45	15	9.720396	10.279604	9.790504	10.209496	10.070108	9.929892	45	15
46	■	9.720447	10.279553	9.790575	10.209425	10.070128	9.929872	30	14
47	45	9.720498	10.279502	9.790645	10.209355	10.070147	9.929853	15	13
■	42	9.720549	10.279451	9.790716	10.209284	10.070167	9.929833	18	12
■	15	9.720600	10.279400	9.790787	10.209213	10.070186	9.929814	45	11
50	30	9.720651	10.279349	9.790857	10.209143	10.070206	9.929794	30	10
51	■	9.720703	10.279297	9.790928	10.209072	10.070225	9.929775	■	9
52	43	9.720754	10.279246	9.790999	10.209001	10.070245	9.929755	17	8
53	15	9.720805	10.279195	9.791069	10.208931	10.070264	9.929736	45	7
54	30	9.720856	10.279144	9.791140	10.208860	10.070284	9.929716	30	6
55	45	9.720907	10.279093	9.791210	10.208790	10.070304	9.929696	15	5
■	44	9.720958	10.279042	9.791281	10.208719	10.070323	9.929677	16	4
57	15	9.721009	10.278991	9.791352	10.208648	10.070343	9.929657	45	3
58	30	9.721060	10.278940	9.791422	10.208578	10.070362	9.929638	30	2
59	■	9.721111	10.278889	9.791493	10.208507	10.070382	9.929618	15	1
60	45	9.721162	10.278838	9.791563	10.208437	10.070401	9.929599	15	0
sec.	sin.	coscant.	tangent.	cotangent.	secant.	cosec.	sec.	sin.	sec.
3° 53'		LOG. SINES, &c.						58 deg.	

2° 7'.		LOG. SINES, &c. (t.)						31 deg.	
sec.	"	sine.	coscant.	tangent.	cotangent.	secant.	cosec.	"	sec.
0	45	9.721162	10.278838	9.701563	10.208437	10.070401	9.929599	15	80
1	15	9.721213	10.278787	9.791634	10.208366	10.070421	9.929579	45	59
2	30	9.721264	10.278736	9.791705	10.208295	10.070440	9.929560	30	58
3	45	9.721315	10.278685	9.791775	10.208225	10.070460	9.929540	15	57
4	46	9.721366	10.278634	9.791846	10.208154	10.070479	9.929521	11	56
5	15	9.721417	10.278583	9.791916	10.208084	10.070499	9.929501	45	55
6	30	9.721468	10.278532	9.791987	10.208013	10.070519	9.929481	30	54
7	45	9.721519	10.278481	9.792057	10.207943	10.070538	9.929462	15	53
8	47	9.721570	10.278430	9.792128	10.207872	10.070558	9.929442	11	52
9	15	9.721621	10.278379	9.792198	10.207802	10.070577	9.929423	45	51
10	30	9.721672	10.278328	9.792269	10.207731	10.070597	9.929403	30	50
11	45	9.721723	10.278277	9.792340	10.207660	10.070616	9.929384	15	49
12	48	9.721774	10.278226	9.792410	10.207590	10.070636	9.929364	12	48
13	15	9.721825	10.278175	9.792481	10.207519	10.070656	9.929345	45	47
14	30	9.721876	10.278124	9.792551	10.207449	10.070675	9.929325	30	46
15	45	9.721927	10.278073	9.792622	10.207378	10.070695	9.929306	15	45
16	49	9.721978	10.278022	9.792692	10.207308	10.070714	9.929286	11	44
17	15	9.722029	10.277971	9.792763	10.207237	10.070734	9.929266	45	43
18	30	9.722080	10.277920	9.792833	10.207167	10.070754	9.929246	30	42
19	45	9.722130	10.277870	9.792904	10.207096	10.070773	9.929227	15	41
20	50	9.722181	10.277819	9.792974	10.207026	10.070793	9.929207	10	40
21	15	9.722232	10.277768	9.793045	10.206955	10.070812	9.929188	45	39
22	30	9.722283	10.277717	9.793115	10.206885	10.070832	9.929168	30	38
23	45	9.722334	10.277666	9.793185	10.206815	10.070852	9.929148	15	37
24	51	9.722385	10.277615	9.793256	10.206744	10.070871	9.929129	9	36
25	15	9.722436	10.277564	9.793326	10.206674	10.070891	9.929109	45	35
26	30	9.722486	10.277514	9.793397	10.206603	10.070910	9.929090	30	34
27	45	9.722537	10.277463	9.793467	10.206533	10.070930	9.929070	15	33
28	52	9.722588	10.277412	9.793538	10.206462	10.070950	9.929050	8	32
29	15	9.722639	10.277361	9.793608	10.206392	10.070969	9.929031	45	31
30	30	9.722690	10.277310	9.793679	10.206321	10.070989	9.929011	30	30
31	45	9.722740	10.277260	9.793749	10.206251	10.071009	9.928991	15	29
32	53	9.722791	10.277209	9.793819	10.206181	10.071028	9.928972	7	28
33	15	9.722842	10.277158	9.793890	10.206110	10.071048	9.928952	45	27
34	30	9.722893	10.277107	9.793960	10.206040	10.071068	9.928932	30	26
35	45	9.722944	10.277056	9.794031	10.205969	10.071087	9.928913	15	25
36	54	9.722994	10.277006	9.794101	10.205899	10.071107	9.928893	6	24
37	15	9.723045	10.276955	9.794171	10.205829	10.071127	9.928873	45	23
38	30	9.723096	10.276904	9.794242	10.205758	10.071146	9.928854	30	22
39	45	9.723146	10.276854	9.794312	10.205688	10.071166	9.928834	15	21
40	55	9.723197	10.276803	9.794383	10.205617	10.071186	9.928814	5	20
41	15	9.723248	10.276752	9.794453	10.205547	10.071205	9.928795	45	19
42	30	9.723299	10.276701	9.794523	10.205477	10.071225	9.928775	30	18
43	45	9.723349	10.276651	9.794594	10.205406	10.071245	9.928755	15	17
44	56	9.723400	10.276600	9.794664	10.205336	10.071264	9.928736	4	16
45	15	9.723451	10.276549	9.794734	10.205266	10.071284	9.928716	45	15
46	30	9.723501	10.276499	9.794805	10.205195	10.071304	9.928696	30	14
47	45	9.723552	10.276448	9.794875	10.205125	10.071323	9.928677	15	13
48	57	9.723603	10.276397	9.794945	10.205055	10.071343	9.928657	3	12
49	15	9.723653	10.276347	9.795016	10.204984	10.071363	9.928637	45	11
50	30	9.723704	10.276296	9.795086	10.204914	10.071382	9.928618	30	10
51	45	9.723754	10.276246	9.795156	10.204844	10.071402	9.928598	15	9
52	58	9.723805	10.276195	9.795227	10.204773	10.071422	9.928578	2	8
53	15	9.723856	10.276144	9.795297	10.204703	10.071441	9.928559	45	7
54	30	9.723906	10.276094	9.795367	10.204633	10.071461	9.928539	30	6
55	45	9.723957	10.276043	9.795438	10.204562	10.071481	9.928519	15	5
56	59	9.724007	10.275993	9.795508	10.204492	10.071501	9.928499	1	4
57	15	9.724058	10.275942	9.795578	10.204422	10.071520	9.928480	45	3
58	30	9.724109	10.275891	9.795649	10.204351	10.071540	9.928460	30	2
59	45	9.724159	10.275841	9.795719	10.204281	10.071560	9.928440	15	1
60	60	9.724210	10.275790	9.795789	10.204211	10.071580	9.928420	0	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
3° 52'.		LOG. SINES &c.						58 deg.	

51-.		LOG SINES, &c. (t.)						52 deg.	
sec.	min.	cosant.	tanant.	secant.	cosant.	tanant.	secant.	min.	sec.
0	0	9.724210	10.275790	9.726789	10.204211	10.071500	9.928430	60	60
1	15	9.724260	10.275740	9.726859	10.204141	10.071599	9.928401	45	59
2	30	9.724311	10.275689	9.726930	10.204070	10.071619	9.928381	30	58
3	45	9.724361	10.275639	9.727000	10.204000	10.071639	9.928361	15	57
4	1	9.724412	10.275589	9.727070	10.203930	10.071659	9.928341	59	56
5	15	9.724462	10.275538	9.727141	10.203859	10.071678	9.928322	45	55
6	30	9.724513	10.275487	9.727211	10.203789	10.071698	9.928302	30	54
7	45	9.724563	10.275437	9.727281	10.203719	10.071718	9.928282	15	53
8	2	9.724614	10.275386	9.727351	10.203649	10.071738	9.928262	58	52
9	15	9.724664	10.275336	9.727421	10.203579	10.071757	9.928243	45	51
10	30	9.724715	10.275285	9.727492	10.203508	10.071777	9.928223	30	50
11	45	9.724765	10.275235	9.727562	10.203438	10.071797	9.928203	15	49
12	3	9.724816	10.275184	9.727632	10.203368	10.071817	9.928183	57	48
13	15	9.724866	10.275134	9.727702	10.203298	10.071836	9.928164	45	47
14	30	9.724916	10.275084	9.727773	10.203227	10.071856	9.928144	30	46
15	45	9.724967	10.275033	9.727843	10.203157	10.071876	9.928124	15	45
16	4	9.725017	10.274983	9.727913	10.203087	10.071896	9.928104	56	44
17	15	9.725068	10.274932	9.727983	10.203017	10.071916	9.928084	45	43
18	30	9.725118	10.274882	9.728053	10.202947	10.071936	9.928065	30	42
19	45	9.725169	10.274831	9.728124	10.202876	10.071955	9.928045	15	41
20	5	9.725219	10.274781	9.728194	10.202806	10.071975	9.928025	55	40
21	15	9.725269	10.274731	9.728264	10.202736	10.071995	9.928005	45	39
22	30	9.725320	10.274680	9.728334	10.202666	10.072015	9.927985	30	38
23	45	9.725370	10.274630	9.728404	10.202596	10.072034	9.927965	15	37
24	6	9.725420	10.274580	9.728474	10.202526	10.072054	9.927945	54	36
25	15	9.725471	10.274529	9.728545	10.202455	10.072074	9.927925	45	35
26	30	9.725521	10.274479	9.728615	10.202385	10.072094	9.927905	30	34
27	45	9.725571	10.274429	9.728685	10.202315	10.072114	9.927885	15	33
28	7	9.725622	10.274378	9.728755	10.202245	10.072133	9.927865	53	32
29	15	9.725672	10.274328	9.728825	10.202175	10.072153	9.927845	45	31
30	30	9.725722	10.274278	9.728895	10.202105	10.072173	9.927825	30	30
31	45	9.725773	10.274227	9.728965	10.202035	10.072193	9.927805	15	29
32	8	9.725823	10.274177	9.729036	10.201964	10.072213	9.927785	52	28
33	15	9.725873	10.274127	9.729106	10.201894	10.072233	9.927765	45	27
34	30	9.725923	10.274077	9.729176	10.201824	10.072253	9.927745	30	26
35	45	9.725974	10.274026	9.729246	10.201754	10.072272	9.927725	15	25
36	9	9.726024	10.273976	9.729316	10.201684	10.072292	9.927705	51	24
37	15	9.726074	10.273926	9.729386	10.201614	10.072312	9.927685	45	23
38	30	9.726124	10.273876	9.729456	10.201544	10.072332	9.927665	30	22
39	45	9.726175	10.273826	9.729526	10.201474	10.072352	9.927645	15	21
40	10	9.726225	10.273775	9.729596	10.201404	10.072372	9.927625	50	20
41	15	9.726275	10.273725	9.729666	10.201334	10.072391	9.927605	45	19
42	30	9.726325	10.273675	9.729736	10.201264	10.072411	9.927585	30	18
43	45	9.726375	10.273625	9.729807	10.201193	10.072431	9.927565	15	17
44	11	9.726426	10.273574	9.729877	10.201123	10.072451	9.927545	49	16
45	15	9.726476	10.273524	9.729947	10.201053	10.072471	9.927525	45	15
46	30	9.726526	10.273474	9.729917	10.200983	10.072491	9.927505	30	14
47	45	9.726576	10.273424	9.729987	10.200913	10.072511	9.927485	15	13
48	12	9.726626	10.273374	9.729957	10.200843	10.072531	9.927465	48	12
49	15	9.726676	10.273324	9.729927	10.200773	10.072550	9.927445	45	11
50	30	9.726727	10.273273	9.729997	10.200703	10.072570	9.927425	30	10
51	45	9.726777	10.273223	9.729967	10.200633	10.072590	9.927405	15	9
52	13	9.726827	10.273173	9.729937	10.200563	10.072610	9.927385	47	8
53	15	9.726877	10.273123	9.729907	10.200493	10.072630	9.927365	45	7
54	30	9.726927	10.273073	9.729877	10.200423	10.072650	9.927345	30	6
55	45	9.726977	10.273023	9.729847	10.200353	10.072670	9.927325	15	5
56	14	9.727027	10.272973	9.729817	10.200283	10.072690	9.927305	46	4
57	15	9.727077	10.272923	9.729787	10.200213	10.072710	9.927285	45	3
58	30	9.727127	10.272873	9.729757	10.200143	10.072730	9.927265	30	2
59	45	9.727178	10.272823	9.729727	10.200073	10.072750	9.927245	15	1
60	15	9.727228	10.272773	9.729697	10.200003	10.072770	9.927225	45	0
sec.	min.	cosant.	tanant.	secant.	cosant.	tanant.	secant.	min.	sec.
51-.		LOG SINES, &c.						57 deg.	

3 ^d 9 ^m		LOG. SINES, &c. (t.)						32 deg.	
sec.	"	sine	coscant	tangent	cotangent	secant	cosec.	"	sec.
0	15	9.727228	10.272772	9.799997	10.200003	10.072769	9.927231	45	60
1	16	9.727278	10.272722	9.800067	10.199933	10.072789	9.927211	45	59
2	30	9.727328	10.272672	9.800137	10.199863	10.072809	9.927191	30	58
3	45	9.727378	10.272622	9.800207	10.199793	10.072829	9.927171	15	57
4	16	9.727428	10.272572	9.800277	10.199723	10.072849	9.927151	44	56
5	15	9.727478	10.272522	9.800347	10.199653	10.072869	9.927131	45	55
6	30	9.727528	10.272472	9.800417	10.199583	10.072889	9.927111	30	54
7	45	9.727578	10.272422	9.800487	10.199513	10.072909	9.927091	15	53
8	17	9.727628	10.272372	9.800557	10.199443	10.072929	9.927071	43	52
9	15	9.727678	10.272322	9.800627	10.199373	10.072949	9.927051	45	51
10	30	9.727728	10.272272	9.800697	10.199303	10.072969	9.927031	30	50
11	45	9.727778	10.272222	9.800768	10.199234	10.072989	9.927011	15	49
12	18	9.727828	10.272172	9.800838	10.199164	10.073009	9.926991	42	48
13	15	9.727878	10.272122	9.800908	10.199094	10.073029	9.926971	45	47
14	30	9.727928	10.272072	9.800978	10.199024	10.073049	9.926951	30	46
15	45	9.727978	10.272022	9.801048	10.198954	10.073069	9.926931	15	45
16	19	9.728027	10.271973	9.801118	10.198884	10.073089	9.926911	41	44
17	15	9.728077	10.271923	9.801188	10.198814	10.073109	9.926891	45	43
18	30	9.728127	10.271873	9.801258	10.198744	10.073129	9.926871	30	42
19	45	9.728177	10.271823	9.801328	10.198674	10.073149	9.926851	15	41
20	20	9.728227	10.271773	9.801398	10.198604	10.073169	9.926831	40	40
21	15	9.728277	10.271723	9.801468	10.198534	10.073189	9.926811	45	39
22	30	9.728327	10.271673	9.801538	10.198464	10.073209	9.926791	30	38
23	45	9.728377	10.271623	9.801608	10.198394	10.073229	9.926771	15	37
24	21	9.728427	10.271573	9.801678	10.198325	10.073249	9.926751	39	36
25	15	9.728478	10.271524	9.801748	10.198255	10.073269	9.926731	45	35
26	30	9.728528	10.271474	9.801818	10.198185	10.073289	9.926711	30	34
27	45	9.728578	10.271424	9.801888	10.198115	10.073309	9.926691	15	33
28	22	9.728628	10.271374	9.801958	10.198045	10.073329	9.926671	38	32
29	15	9.728678	10.271324	9.802028	10.197976	10.073349	9.926651	45	31
30	30	9.728728	10.271274	9.802098	10.197906	10.073369	9.926631	30	30
31	45	9.728778	10.271225	9.802168	10.197836	10.073389	9.926611	15	29
32	23	9.728828	10.271175	9.802238	10.197766	10.073409	9.926591	37	28
33	15	9.728878	10.271125	9.802308	10.197696	10.073429	9.926571	45	27
34	30	9.728928	10.271075	9.802378	10.197626	10.073449	9.926551	30	26
35	45	9.728978	10.271025	9.802448	10.197557	10.073469	9.926531	15	25
36	24	9.729028	10.270976	9.802518	10.197487	10.073489	9.926511	36	24
37	15	9.729078	10.270926	9.802588	10.197417	10.073509	9.926491	45	23
38	30	9.729128	10.270876	9.802658	10.197347	10.073529	9.926471	30	22
39	45	9.729178	10.270826	9.802728	10.197277	10.073549	9.926451	15	21
40	25	9.729228	10.270777	9.802798	10.197208	10.073569	9.926431	35	20
41	15	9.729278	10.270727	9.802868	10.197138	10.073589	9.926411	45	19
42	30	9.729328	10.270677	9.802938	10.197068	10.073609	9.926391	30	18
43	45	9.729378	10.270627	9.803008	10.196998	10.073629	9.926371	15	17
44	26	9.729428	10.270578	9.803078	10.196928	10.073649	9.926351	34	16
45	15	9.729478	10.270528	9.803148	10.196858	10.073669	9.926331	45	15
46	30	9.729528	10.270478	9.803218	10.196788	10.073689	9.926311	30	14
47	45	9.729578	10.270429	9.803288	10.196719	10.073710	9.926290	15	13
48	27	9.729628	10.270379	9.803358	10.196649	10.073730	9.926270	33	12
49	15	9.729678	10.270329	9.803428	10.196580	10.073750	9.926250	45	11
50	30	9.729728	10.270280	9.803498	10.196510	10.073770	9.926230	30	10
51	45	9.729778	10.270230	9.803568	10.196440	10.073790	9.926210	15	9
52	28	9.729828	10.270180	9.803638	10.196370	10.073810	9.926190	32	8
53	15	9.729878	10.270131	9.803699	10.196301	10.073830	9.926170	45	7
54	30	9.729928	10.270081	9.803769	10.196231	10.073850	9.926150	30	6
55	45	9.729978	10.270032	9.803839	10.196161	10.073870	9.926130	15	5
56	29	9.730028	10.269982	9.803908	10.196092	10.073890	9.926110	31	4
57	15	9.730078	10.269932	9.803978	10.196022	10.073911	9.926090	45	3
58	30	9.730128	10.269883	9.804048	10.195952	10.073931	9.926070	30	2
59	45	9.730178	10.269833	9.804118	10.195883	10.073951	9.926050	15	1
60	30	9.730218	10.269784	9.804187	10.195813	10.073971	9.926029	30	0
sec.	"	sine	coscant	tangent	cotangent	secant	cosec.	"	sec.
3 ^d 50 ^m		LOG. SINES, &c.						57 deg	

3° 10'		LOG. SINES, &c. (1.)						32 deg.	
sec.		sine.	coscant.	tangent.	cotangent.	secant.	cosec.		sec.
0	30	9.730216	10.269784	9.804187	10.195813	10.073971	9.926029	30	60
1	15	9.730266	10.269734	9.804257	10.195743	10.073991	9.926009	15	59
2	30	9.730316	10.269684	9.804327	10.195673	10.074011	9.925989	30	58
3	45	9.730365	10.269635	9.804396	10.195604	10.074031	9.925969	15	57
4	31	9.730415	10.269585	9.804466	10.195534	10.074051	9.925949	29	56
5	15	9.730464	10.269536	9.804536	10.195464	10.074072	9.925928	45	55
6	30	9.730514	10.269486	9.804605	10.195395	10.074092	9.925908	30	54
7	45	9.730563	10.269437	9.804675	10.195325	10.074112	9.925888	15	53
8	32	9.730613	10.269387	9.804745	10.195255	10.074132	9.925868	28	52
9	15	9.730662	10.269338	9.804814	10.195186	10.074152	9.925848	45	51
10	30	9.730712	10.269288	9.804884	10.195116	10.074172	9.925828	30	50
11	45	9.730761	10.269239	9.804954	10.195046	10.074192	9.925808	15	49
12	33	9.730811	10.269189	9.805023	10.194977	10.074213	9.925787	27	48
13	15	9.730860	10.269139	9.805093	10.194907	10.074233	9.925767	45	47
14	30	9.730909	10.269090	9.805163	10.194837	10.074253	9.925747	30	46
15	45	9.730959	10.269041	9.805232	10.194768	10.074273	9.925727	15	45
16	34	9.731009	10.268991	9.805302	10.194698	10.074293	9.925707	26	44
17	15	9.731058	10.268942	9.805371	10.194629	10.074313	9.925687	45	43
18	30	9.731108	10.268892	9.805441	10.194559	10.074334	9.925666	30	42
19	45	9.731157	10.268843	9.805511	10.194489	10.074354	9.925646	15	41
20	35	9.731206	10.268794	9.805580	10.194420	10.074374	9.925626	25	40
21	15	9.731256	10.268744	9.805650	10.194350	10.074394	9.925606	45	39
22	30	9.731305	10.268695	9.805719	10.194281	10.074414	9.925586	30	38
23	45	9.731355	10.268645	9.805789	10.194211	10.074434	9.925566	15	37
24	36	9.731404	10.268596	9.805859	10.194141	10.074455	9.925545	24	36
25	15	9.731453	10.268547	9.805928	10.194072	10.074475	9.925525	45	35
26	30	9.731503	10.268497	9.805998	10.194002	10.074495	9.925505	30	34
27	45	9.731552	10.268448	9.806067	10.193933	10.074515	9.925485	15	33
28	37	9.731601	10.268399	9.806137	10.193863	10.074535	9.925465	23	32
29	15	9.731651	10.268349	9.806206	10.193794	10.074556	9.925444	45	31
30	30	9.731700	10.268300	9.806276	10.193724	10.074576	9.925424	30	30
31	45	9.731749	10.268251	9.806345	10.193654	10.074596	9.925404	15	29
32	38	9.731799	10.268201	9.806415	10.193585	10.074616	9.925384	22	28
33	15	9.731848	10.268152	9.806485	10.193515	10.074637	9.925363	45	27
34	30	9.731897	10.268103	9.806554	10.193446	10.074657	9.925343	30	26
35	45	9.731947	10.268053	9.806624	10.193376	10.074677	9.925323	15	25
36	39	9.731996	10.268004	9.806693	10.193307	10.074697	9.925303	21	24
37	15	9.732045	10.267955	9.806763	10.193237	10.074718	9.925282	45	23
38	30	9.732095	10.267905	9.806832	10.193168	10.074738	9.925262	30	22
39	45	9.732144	10.267856	9.806901	10.193098	10.074758	9.925242	15	21
40	40	9.732193	10.267807	9.806971	10.193029	10.074778	9.925222	20	20
41	15	9.732242	10.267758	9.807041	10.192959	10.074799	9.925201	45	19
42	30	9.732292	10.267708	9.807110	10.192890	10.074819	9.925181	30	18
43	45	9.732341	10.267659	9.807180	10.192820	10.074839	9.925161	15	17
44	41	9.732390	10.267610	9.807249	10.192751	10.074859	9.925141	19	16
45	15	9.732439	10.267561	9.807319	10.192681	10.074880	9.925120	45	15
46	30	9.732489	10.267511	9.807388	10.192612	10.074900	9.925100	30	14
47	45	9.732538	10.267462	9.807458	10.192542	10.074920	9.925080	15	13
48	42	9.732587	10.267413	9.807527	10.192473	10.074940	9.925060	18	12
49	15	9.732636	10.267364	9.807597	10.192403	10.074961	9.925039	45	11
50	30	9.732686	10.267315	9.807666	10.192334	10.074981	9.925019	30	10
51	45	9.732734	10.267266	9.807736	10.192264	10.075001	9.924999	15	9
52	43	9.732784	10.267216	9.807806	10.192195	10.075021	9.924979	17	8
53	15	9.732833	10.267167	9.807875	10.192125	10.075042	9.924958	45	7
54	30	9.732883	10.267118	9.807944	10.192056	10.075062	9.924938	30	6
55	45	9.732931	10.267069	9.808013	10.191987	10.075082	9.924918	15	5
56	44	9.732980	10.267019	9.808083	10.191917	10.075103	9.924897	16	4
57	15	9.733029	10.266971	9.808152	10.191848	10.075123	9.924877	45	3
58	30	9.733079	10.266921	9.808222	10.191778	10.075143	9.924857	30	2
59	45	9.733128	10.266872	9.808291	10.191709	10.075164	9.924836	15	1
60	45	9.733177	10.266823	9.808361	10.191639	10.075184	9.924816	15	0
sec.		cosine.	secant.	cotangent.	tangent.	cosecant.	sine.		sec.
3° 49'		LOG. SINES, &c.						57 deg.	

2 ^d 11 ^m .		LOG. SINES, &c. (t.)						32 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	45	9.733177	10.266823	9.808361	10.191639	10.075184	9.924816	15	60
1	15	9.733226	10.266774	9.808430	10.191570	10.075204	9.924796	45	59
2	30	9.733275	10.266725	9.808499	10.191501	10.075225	9.924775	30	58
3	45	9.733324	10.266676	9.808569	10.191431	10.075245	9.924755	15	57
4	46	9.733373	10.266627	9.808638	10.191362	10.075265	9.924735	14	56
5	15	9.733422	10.266578	9.808708	10.191292	10.075286	9.924714	45	55
6	30	9.733471	10.266529	9.808777	10.191223	10.075306	9.924694	30	54
7	45	9.733520	10.266480	9.808846	10.191154	10.075326	9.924674	15	53
8	47	9.733569	10.266431	9.808916	10.191084	10.075347	9.924653	13	52
9	15	9.733618	10.266382	9.808985	10.191015	10.075367	9.924633	45	51
10	30	9.733667	10.266333	9.809055	10.190945	10.075387	9.924613	30	50
11	45	9.733716	10.266284	9.809124	10.190876	10.075408	9.924592	15	49
12	48	9.733765	10.266235	9.809193	10.190807	10.075428	9.924572	12	48
13	15	9.733814	10.266186	9.809263	10.190737	10.075448	9.924552	45	47
14	30	9.733863	10.266137	9.809332	10.190668	10.075469	9.924531	30	46
15	45	9.733912	10.266088	9.809401	10.190599	10.075489	9.924511	15	45
16	49	9.733961	10.266039	9.809471	10.190529	10.075509	9.924491	11	44
17	15	9.734010	10.265990	9.809540	10.190460	10.075530	9.924470	45	43
18	30	9.734059	10.265941	9.809609	10.190391	10.075550	9.924450	30	42
19	45	9.734108	10.265892	9.809679	10.190321	10.075570	9.924430	15	41
20	50	9.734157	10.265843	9.809748	10.190252	10.075591	9.924409	10	40
21	15	9.734206	10.265794	9.809817	10.190183	10.075611	9.924389	45	39
22	30	9.734255	10.265745	9.809887	10.190113	10.075632	9.924368	30	38
23	45	9.734304	10.265696	9.809956	10.190044	10.075652	9.924348	15	37
24	51	9.734353	10.265647	9.810025	10.189975	10.075672	9.924328	9	36
25	15	9.734402	10.265598	9.810095	10.189905	10.075693	9.924307	45	35
26	30	9.734451	10.265549	9.810164	10.189836	10.075713	9.924287	30	34
27	45	9.734500	10.265500	9.810233	10.189767	10.075734	9.924266	15	33
28	52	9.734548	10.265452	9.810302	10.189698	10.075754	9.924246	8	32
29	15	9.734597	10.265403	9.810372	10.189628	10.075774	9.924226	45	31
30	30	9.734646	10.265354	9.810441	10.189559	10.075795	9.924205	30	30
31	45	9.734695	10.265305	9.810510	10.189490	10.075815	9.924185	15	29
32	53	9.734744	10.265256	9.810580	10.189420	10.075836	9.924164	7	28
33	15	9.734793	10.265207	9.810649	10.189351	10.075856	9.924144	45	27
34	30	9.734842	10.265158	9.810718	10.189282	10.075876	9.924124	30	26
35	45	9.734890	10.265110	9.810787	10.189213	10.075897	9.924103	15	25
36	54	9.734939	10.265061	9.810857	10.189143	10.075917	9.924083	6	24
37	15	9.734988	10.265012	9.810926	10.189074	10.075938	9.924062	45	23
38	30	9.735037	10.264963	9.810995	10.189005	10.075958	9.924042	30	22
39	45	9.735086	10.264914	9.811064	10.188936	10.075979	9.924021	15	21
40	55	9.735134	10.264866	9.811134	10.188866	10.075999	9.924001	5	20
41	15	9.735183	10.264817	9.811203	10.188797	10.076020	9.923980	45	19
42	30	9.735232	10.264768	9.811272	10.188728	10.076040	9.923960	30	18
43	45	9.735281	10.264719	9.811341	10.188659	10.076060	9.923940	15	17
44	56	9.735330	10.264670	9.811410	10.188590	10.076081	9.923919	4	16
45	15	9.735378	10.264622	9.811480	10.188520	10.076101	9.923899	45	15
46	30	9.735427	10.264573	9.811549	10.188451	10.076122	9.923878	30	14
47	45	9.735476	10.264524	9.811618	10.188382	10.076142	9.923858	15	13
48	57	9.735525	10.264475	9.811687	10.188313	10.076163	9.923837	3	12
49	15	9.735573	10.264427	9.811756	10.188244	10.076183	9.923817	45	11
50	30	9.735622	10.264378	9.811826	10.188174	10.076204	9.923796	30	10
51	45	9.735671	10.264329	9.811895	10.188105	10.076224	9.923776	15	9
52	58	9.735719	10.264281	9.811964	10.188036	10.076245	9.923755	2	8
53	15	9.735768	10.264232	9.812033	10.187967	10.076265	9.923735	45	7
54	30	9.735817	10.264183	9.812102	10.187898	10.076286	9.923714	30	6
55	45	9.735865	10.264135	9.812172	10.187828	10.076306	9.923694	15	5
56	59	9.735914	10.264086	9.812241	10.187759	10.076327	9.923673	1	4
57	15	9.735963	10.264037	9.812310	10.187690	10.076347	9.923653	45	3
58	30	9.736011	10.263989	9.812379	10.187621	10.076368	9.923632	30	2
59	45	9.736060	10.263940	9.812448	10.187552	10.076388	9.923612	15	1
60	60	9.736109	10.263891	9.812517	10.187483	10.076409	9.923591	0	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
3 48 ^m .		LOG. SINES &c.						57 deg.	

2° 12'.		LOG. SINES, &c. (L)						33 deg.	
sec.	"	sine.	coscant.	tang. 11	cotangent.	secant.	cosine.	"	sec.
0	0	9.736109	10.263891	9.812517	10.187483	10.078409	9.923691	50	60
1	■	9.736137	10.263843	9.812586	10.187414	10.078429	9.923571	■	59
2	30	9.736206	10.263794	9.812656	10.187344	10.078450	9.923550	30	58
3	45	9.736255	10.263745	9.812725	10.187275	10.078470	9.923530	15	57
4	1	9.736303	10.263696	9.812794	10.187206	10.078491	9.923509	59	56
5	15	9.736352	10.263648	9.812863	10.187137	10.078511	9.923489	45	55
6	30	9.736400	10.263600	9.812932	10.187068	10.078532	9.923468	30	54
7	45	9.736449	10.263551	9.813001	10.186999	10.078552	9.923448	15	53
8	2	9.736498	10.263502	9.813070	10.186930	10.078573	9.923427	58	52
9	15	9.736546	10.263454	9.813139	10.186861	10.078593	9.923407	45	51
10	30	9.736595	10.263405	9.813209	10.186791	10.078614	9.923386	30	50
11	45	9.736637	10.263357	9.813278	10.186722	10.078634	9.923366	15	49
12	3	9.736692	10.263308	9.813347	10.186653	10.078655	9.923345	57	■
13	15	9.736740	10.263260	9.813416	10.186584	10.078676	9.923324	■	47
14	30	9.736789	10.263211	9.813485	10.186515	10.078696	9.923304	30	■
15	45	9.736837	10.263163	9.813554	10.186446	10.078717	9.923283	15	46
16	4	9.736886	10.263114	9.813623	10.186377	10.078737	9.923263	56	44
17	15	9.736934	10.263066	9.813692	10.186308	10.078758	9.923242	45	43
18	30	9.736983	10.263017	9.813761	10.186239	10.078778	9.923222	30	42
19	45	9.737031	10.262969	9.813830	10.186170	10.078799	9.923201	■	41
20	5	9.737080	10.262920	9.813899	10.186101	10.078820	9.923180	55	40
21	15	9.737128	10.262872	9.813968	10.186032	10.078840	9.923160	45	39
22	30	9.737177	10.262823	9.814037	10.185963	10.078861	9.923139	30	38
23	45	9.737225	10.262775	9.814106	10.185894	10.078881	9.923119	15	37
24	6	9.737274	10.262726	9.814175	10.185825	10.078902	9.923098	54	36
25	15	9.737322	10.262678	9.814244	10.185756	10.078922	9.923078	45	35
26	30	9.737371	10.262629	9.814314	10.185687	10.078943	9.923057	30	34
27	45	9.737419	10.262581	9.814383	10.185617	10.078964	9.923036	15	33
28	7	9.737467	10.262533	9.814452	10.185548	10.078984	9.923016	53	32
29	15	9.737516	10.262484	9.814521	10.185479	10.079005	9.922995	45	31
30	30	9.737564	10.262436	9.814590	10.185410	10.079025	9.922975	30	30
31	45	9.737613	10.262387	9.814659	10.185341	10.079046	9.922954	15	29
32	8	9.737661	10.262339	9.814728	10.185272	10.079067	9.922933	52	28
33	15	9.737709	10.262291	9.814797	10.185203	10.079087	9.922913	45	27
34	30	9.737758	10.262242	9.814866	10.185134	10.079108	9.922892	30	26
35	45	9.737806	10.262194	9.814935	10.185065	10.079129	9.922871	15	25
36	9	9.737855	10.262145	9.815004	10.184996	10.079149	9.922851	51	24
37	15	9.737903	10.262097	9.815073	10.184927	10.079170	9.922830	45	23
38	30	9.737951	10.262049	9.815142	10.184858	10.079190	9.922810	30	22
39	45	9.738000	10.262000	9.815211	10.184789	10.079211	9.922789	15	21
40	10	9.738048	10.261952	9.815279	10.184721	10.079232	9.922768	50	20
41	15	9.738096	10.261904	9.815348	10.184652	10.079252	9.922748	45	19
42	30	9.738145	10.261855	9.815417	10.184583	10.079273	9.922727	30	18
43	45	9.738193	10.261807	9.815486	10.184514	10.079294	9.922706	15	17
44	11	9.738241	10.261759	9.815555	10.184445	10.079314	9.922686	49	16
45	15	9.738289	10.261711	9.815624	10.184376	10.079335	9.922665	45	15
46	30	9.738338	10.261662	9.815693	10.184307	10.079356	9.922644	30	14
47	45	9.738386	10.261614	9.815762	10.184238	10.079376	9.922624	15	13
48	12	9.738434	10.261566	9.815831	10.184169	10.079397	9.922603	48	12
49	15	9.738482	10.261518	9.815900	10.184100	10.079418	9.922582	45	11
50	30	9.738531	10.261469	9.815969	10.184031	10.079438	9.922562	30	10
51	45	9.738579	10.261421	9.816038	10.183962	10.079459	9.922541	15	9
52	13	9.738627	10.261373	9.816107	10.183893	10.079480	9.922520	47	8
53	15	9.738675	10.261325	9.816176	10.183824	10.079500	9.922500	45	7
54	30	9.738724	10.261276	9.816245	10.183755	10.079521	9.922479	30	6
55	45	9.738772	10.261228	9.816313	10.183687	10.079542	9.922458	15	5
56	14	9.738820	10.261180	9.816382	10.183618	10.079562	9.922438	46	4
57	15	9.738868	10.261132	9.816451	10.183549	10.079583	9.922417	45	3
58	■	9.738916	10.261084	9.816520	10.183480	10.079604	9.922396	30	2
59	45	9.738965	10.261035	9.816589	10.183411	10.079624	9.922376	15	1
60	15	9.739013	10.260987	9.816658	10.183342	10.079645	9.922355	45	0
sec.	"	cosine.	secant.	tangent.	cotangent.	secant.	sine.	"	sec.
3° 47'.		LOG. SINES, &c.						56 deg.	

2 nd 13 ^m .		LOG. SINES, &c. (1)						83 deg.	
sec.	min.	sine.	cosine.	tangent.	cotangent.	secant.	cosec.	sec.	min.
0	15	9.739013	10.260987	9.816658	10.183342	10.077645	9.922355	45	60
1	15	9.739061	10.260939	9.816727	10.183273	10.077666	9.922334	45	59
2	30	9.739109	10.260891	9.816796	10.183204	10.077687	9.922313	30	58
3	45	9.739157	10.260843	9.816865	10.183135	10.077707	9.922293	15	57
4	16	9.739205	10.260795	9.816933	10.183067	10.077728	9.922272	44	56
5	15	9.739254	10.260746	9.817002	10.182998	10.077749	9.922251	45	55
6	30	9.739302	10.260698	9.817071	10.182929	10.077769	9.922231	30	54
7	45	9.739350	10.260650	9.817140	10.182860	10.077790	9.922210	15	53
8	17	9.739398	10.260602	9.817209	10.182791	10.077811	9.922189	43	52
9	15	9.739446	10.260554	9.817278	10.182722	10.077832	9.922168	45	51
10	30	9.739494	10.260506	9.817346	10.182654	10.077852	9.922148	30	50
11	45	9.739542	10.260458	9.817415	10.182585	10.077873	9.922127	15	49
12	18	9.739590	10.260410	9.817484	10.182516	10.077894	9.922106	42	48
13	15	9.739638	10.260362	9.817553	10.182447	10.077915	9.922085	45	47
14	30	9.739686	10.260314	9.817622	10.182378	10.077936	9.922065	30	46
15	45	9.739734	10.260265	9.817691	10.182309	10.077956	9.922044	15	45
16	19	9.739783	10.260217	9.817759	10.182241	10.077977	9.922023	41	44
17	15	9.739831	10.260169	9.817828	10.182172	10.077998	9.922002	45	43
18	30	9.739879	10.260121	9.817897	10.182103	10.078018	9.921982	30	42
19	45	9.739927	10.260073	9.817966	10.182034	10.078039	9.921961	15	41
20	20	9.739975	10.260025	9.818035	10.181965	10.078060	9.921940	40	40
21	15	9.740023	10.259977	9.818103	10.181897	10.078081	9.921919	45	39
22	30	9.740071	10.259929	9.818172	10.181828	10.078101	9.921899	30	38
23	45	9.740119	10.259881	9.818241	10.181759	10.078122	9.921878	15	37
24	21	9.740167	10.259833	9.818310	10.181690	10.078143	9.921857	39	36
25	15	9.740215	10.259785	9.818379	10.181621	10.078164	9.921836	45	35
26	30	9.740263	10.259737	9.818447	10.181553	10.078185	9.921815	30	34
27	45	9.740311	10.259689	9.818516	10.181484	10.078205	9.921795	15	33
28	22	9.740359	10.259641	9.818585	10.181415	10.078226	9.921774	38	32
29	15	9.740407	10.259593	9.818654	10.181346	10.078247	9.921753	45	31
30	30	9.740455	10.259545	9.818722	10.181278	10.078268	9.921732	30	30
31	45	9.740502	10.259498	9.818791	10.181209	10.078289	9.921711	15	29
32	23	9.740550	10.259450	9.818860	10.181140	10.078309	9.921691	37	28
33	15	9.740598	10.259402	9.818929	10.181071	10.078330	9.921670	45	27
34	30	9.740646	10.259354	9.818997	10.181003	10.078351	9.921649	30	26
35	45	9.740694	10.259306	9.819066	10.180934	10.078372	9.921628	15	25
36	24	9.740742	10.259258	9.819135	10.180865	10.078393	9.921607	36	24
37	15	9.740790	10.259210	9.819203	10.180797	10.078414	9.921586	45	23
38	30	9.740838	10.259162	9.819272	10.180728	10.078434	9.921566	30	22
39	45	9.740886	10.259114	9.819341	10.180659	10.078455	9.921545	15	21
40	25	9.740934	10.259066	9.819410	10.180590	10.078476	9.921524	35	20
41	15	9.740981	10.259019	9.819478	10.180522	10.078497	9.921503	45	19
42	30	9.741039	10.258971	9.819547	10.180453	10.078518	9.921482	30	18
43	45	9.741077	10.258923	9.819616	10.180384	10.078539	9.921461	15	17
44	26	9.741125	10.258875	9.819684	10.180316	10.078559	9.921441	34	16
45	15	9.741173	10.258827	9.819753	10.180247	10.078580	9.921420	45	15
46	30	9.741221	10.258779	9.819822	10.180178	10.078601	9.921399	30	14
47	45	9.741268	10.258732	9.819890	10.180110	10.078622	9.921378	15	13
48	27	9.741316	10.258684	9.819959	10.180041	10.078643	9.921357	33	12
49	15	9.741364	10.258636	9.820028	10.179972	10.078664	9.921336	45	11
50	30	9.741412	10.258588	9.820096	10.179904	10.078685	9.921315	30	10
51	45	9.741460	10.258540	9.820165	10.179835	10.078705	9.921295	15	9
52	28	9.741507	10.258493	9.820234	10.179766	10.078726	9.921274	32	8
53	15	9.741555	10.258445	9.820302	10.179698	10.078747	9.921253	45	7
54	30	9.741603	10.258397	9.820371	10.179629	10.078768	9.921232	30	6
55	45	9.741651	10.258349	9.820440	10.179560	10.078789	9.921211	15	5
56	29	9.741699	10.258301	9.820508	10.179492	10.078810	9.921190	31	4
57	15	9.741746	10.258254	9.820577	10.179423	10.078831	9.921169	45	3
58	30	9.741794	10.258206	9.820646	10.179354	10.078852	9.921148	30	2
59	45	9.741842	10.258158	9.820714	10.179286	10.078873	9.921127	15	1
60	30	9.741890	10.258111	9.820783	10.179217	10.078893	9.921107	30	0
sec.	min.	sine.	cosine.	tangent.	cotangent.	secant.	cosec.	sec.	min.
3 rd 46 ^m .		LOG. SINES, &c.						56 deg.	

2° 14'		LOG. SINES, &c. (1.)						33 deg.	
sec.	"	sin.	coscant.	tangent.	cotangent.	secant.	cosec.	"	sec.
0	30	9.741880	10.268111	9.820783	10.179217	10.078893	9.921107	30	60
1	15	9.741937	10.268063	9.820800	10.179199	10.078914	9.921086	45	59
2	30	9.741985	10.268015	9.820820	10.179180	10.078935	9.921065	30	58
3	45	9.742033	10.267967	9.820840	10.179161	10.078956	9.921044	15	57
4	31	9.742080	10.267920	9.821057	10.178943	10.078977	9.921023	29	56
5	15	9.742128	10.267872	9.821126	10.178874	10.078998	9.921002	45	55
6	30	9.742176	10.267824	9.821195	10.178805	10.079019	9.920981	30	54
7	45	9.742223	10.267777	9.821263	10.178737	10.079040	9.920960	15	53
8	32	9.742271	10.267729	9.821332	10.178668	10.079061	9.920939	28	52
9	15	9.742319	10.267681	9.821400	10.178600	10.079082	9.920918	45	51
10	30	9.742366	10.267634	9.821469	10.178531	10.079103	9.920897	30	50
11	45	9.742414	10.267586	9.821537	10.178463	10.079124	9.920876	15	49
12	33	9.742463	10.267538	9.821606	10.178394	10.079145	9.920855	27	48
13	15	9.742509	10.267491	9.821675	10.178325	10.079166	9.920835	45	47
14	30	9.742557	10.267443	9.821743	10.178257	10.079186	9.920814	30	46
15	45	9.742604	10.267396	9.821812	10.178188	10.079207	9.920793	15	45
16	34	9.742652	10.267348	9.821880	10.178120	10.079228	9.920772	26	44
17	15	9.742700	10.267300	9.821949	10.178051	10.079249	9.920751	45	43
18	30	9.742747	10.267253	9.822017	10.177983	10.079270	9.920730	30	42
19	45	9.742795	10.267205	9.822086	10.177914	10.079291	9.920709	15	41
20	35	9.742842	10.267158	9.822154	10.177846	10.079312	9.920688	25	40
21	15	9.742890	10.267110	9.822223	10.177777	10.079333	9.920667	45	39
22	30	9.742937	10.267063	9.822291	10.177709	10.079354	9.920646	30	38
23	45	9.742985	10.267015	9.822360	10.177640	10.079375	9.920625	15	37
24	36	9.743032	10.266968	9.822429	10.177571	10.079396	9.920604	24	36
25	15	9.743080	10.266920	9.822497	10.177503	10.079417	9.920583	45	35
26	30	9.743128	10.266872	9.822566	10.177434	10.079438	9.920562	30	34
27	45	9.743175	10.266825	9.822634	10.177366	10.079459	9.920541	15	33
28	37	9.743223	10.266777	9.822703	10.177297	10.079480	9.920520	23	32
29	15	9.743270	10.266730	9.822771	10.177229	10.079501	9.920499	45	31
30	30	9.743318	10.266682	9.822840	10.177160	10.079522	9.920478	30	30
31	45	9.743365	10.266635	9.822908	10.177092	10.079543	9.920457	15	29
32	38	9.743413	10.266587	9.822977	10.177023	10.079564	9.920436	22	28
33	15	9.743460	10.266540	9.823045	10.176955	10.079585	9.920415	45	27
34	30	9.743507	10.266493	9.823114	10.176886	10.079606	9.920394	30	26
35	45	9.743555	10.266445	9.823182	10.176818	10.079627	9.920373	15	25
36	39	9.743602	10.266398	9.823250	10.176750	10.079648	9.920352	21	24
37	15	9.743650	10.266350	9.823319	10.176681	10.079669	9.920331	45	23
38	30	9.743697	10.266303	9.823387	10.176613	10.079690	9.920310	30	22
39	45	9.743745	10.266256	9.823456	10.176544	10.079711	9.920289	15	21
40	40	9.743792	10.266208	9.823524	10.176476	10.079732	9.920268	20	20
41	15	9.743840	10.266161	9.823593	10.176407	10.079753	9.920247	45	19
42	30	9.743887	10.266113	9.823661	10.176339	10.079774	9.920226	30	18
43	45	9.743934	10.266066	9.823730	10.176270	10.079795	9.920205	15	17
44	41	9.743982	10.266018	9.823798	10.176202	10.079816	9.920184	19	16
45	15	9.744029	10.265971	9.823867	10.176133	10.079837	9.920163	45	15
46	30	9.744076	10.265924	9.823935	10.176065	10.079859	9.920141	30	14
47	45	9.744124	10.265876	9.824003	10.175997	10.079880	9.920120	15	13
48	42	9.744171	10.265829	9.824072	10.175928	10.079901	9.920099	18	12
49	15	9.744219	10.265781	9.824140	10.175860	10.079922	9.920078	45	11
50	30	9.744266	10.265734	9.824209	10.175791	10.079943	9.920057	30	10
51	45	9.744313	10.265687	9.824277	10.175723	10.079964	9.920036	15	9
52	43	9.744361	10.265639	9.824345	10.175655	10.079985	9.920015	17	8
53	15	9.744408	10.265592	9.824414	10.175586	10.080006	9.919994	45	7
54	30	9.744456	10.265545	9.824482	10.175518	10.080027	9.919973	30	6
55	45	9.744502	10.265498	9.824551	10.175449	10.080048	9.919952	15	5
56	44	9.744550	10.265450	9.824619	10.175381	10.080069	9.919931	16	4
57	15	9.744597	10.265403	9.824688	10.175313	10.080090	9.919910	45	3
58	30	9.744644	10.265356	9.824756	10.175244	10.080111	9.919889	30	2
59	45	9.744692	10.265308	9.824824	10.175176	10.080133	9.919867	15	1
60	45	9.744739	10.265261	9.824893	10.175107	10.080154	9.919846	15	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
2° 45'		LOG. SINES, &c.						56 deg.	

2° 15'		LOG. SINES, &c. (L.)					33 deg.	
sec.	min.	sine.	coscant.	tangent.	cotangent.	secant.	cosine.	sec.
0	45	9.744730	10.255261	9.824893	10.175107	10.080154	9.919846	15 60
1	15	9.744786	10.255214	9.824961	10.175039	10.080175	9.919825	45 59
2	30	9.744833	10.255167	9.825029	10.174971	10.080197	9.919804	30 58
3	45	9.744881	10.255119	9.825098	10.174902	10.080217	9.919783	15 57
4	46	9.744928	10.255073	9.825166	10.174834	10.080238	9.919762	14 56
5	15	9.744975	10.255025	9.825234	10.174766	10.080259	9.919741	45 55
6	30	9.745022	10.254978	9.825303	10.174697	10.080280	9.919720	30 54
7	45	9.745070	10.254930	9.825371	10.174629	10.080301	9.919699	15 53
8	47	9.745117	10.254883	9.825439	10.174561	10.080323	9.919677	13 52
9	15	9.745164	10.254836	9.825508	10.174492	10.080344	9.919656	45 51
10	30	9.745211	10.254789	9.825576	10.174424	10.080365	9.919635	30 50
11	45	9.745258	10.254742	9.825644	10.174356	10.080386	9.919614	15 49
12	48	9.745306	10.254694	9.825713	10.174287	10.080407	9.919593	12 48
13	15	9.745353	10.254647	9.825781	10.174219	10.080428	9.919572	45 47
14	30	9.745400	10.254600	9.825849	10.174151	10.080449	9.919551	30 46
15	45	9.745447	10.254553	9.825918	10.174082	10.080471	9.919529	15 45
16	49	9.745494	10.254506	9.825986	10.174014	10.080492	9.919508	11 44
17	15	9.745541	10.254459	9.826054	10.173946	10.080513	9.919487	45 43
18	30	9.745589	10.254411	9.826123	10.173877	10.080534	9.919466	30 42
19	45	9.745636	10.254364	9.826191	10.173809	10.080555	9.919445	15 41
20	50	9.745683	10.254317	9.826259	10.173741	10.080576	9.919424	10 40
21	15	9.745730	10.254270	9.826327	10.173673	10.080598	9.919402	45 39
22	30	9.745777	10.254223	9.826396	10.173604	10.080619	9.919381	30 38
23	45	9.745824	10.254176	9.826464	10.173536	10.080640	9.919360	15 37
24	51	9.745871	10.254129	9.826532	10.173468	10.080661	9.919339	9 36
25	15	9.745918	10.254082	9.826601	10.173399	10.080682	9.919318	45 35
26	30	9.745965	10.254035	9.826669	10.173331	10.080703	9.919297	30 34
27	45	9.746012	10.253988	9.826737	10.173263	10.080725	9.919275	15 33
28	52	9.746059	10.253941	9.826806	10.173195	10.080746	9.919254	8 32
29	15	9.746107	10.253893	9.826874	10.173126	10.080767	9.919233	45 31
30	30	9.746154	10.253846	9.826942	10.173058	10.080788	9.919212	30 30
31	45	9.746201	10.253799	9.827010	10.172990	10.080809	9.919191	15 29
32	53	9.746248	10.253752	9.827078	10.172922	10.080831	9.919169	7 28
33	15	9.746295	10.253705	9.827147	10.172853	10.080852	9.919148	45 27
34	30	9.746342	10.253658	9.827215	10.172785	10.080873	9.919127	30 26
35	45	9.746389	10.253611	9.827283	10.172717	10.080894	9.919106	15 25
36	54	9.746436	10.253564	9.827351	10.172649	10.080916	9.919084	6 24
37	15	9.746483	10.253517	9.827419	10.172581	10.080937	9.919063	45 23
38	30	9.746530	10.253470	9.827488	10.172512	10.080958	9.919042	30 22
39	45	9.746577	10.253423	9.827556	10.172444	10.080979	9.919021	15 21
40	55	9.746624	10.253376	9.827624	10.172376	10.081000	9.919000	5 20
41	15	9.746671	10.253329	9.827692	10.172308	10.081022	9.918978	45 19
42	30	9.746718	10.253282	9.827760	10.172240	10.081043	9.918957	30 18
43	45	9.746765	10.253235	9.827829	10.172171	10.081064	9.918936	15 17
44	56	9.746811	10.253189	9.827897	10.172103	10.081085	9.918915	4 16
45	15	9.746858	10.253142	9.827965	10.172035	10.081107	9.918893	45 15
46	30	9.746905	10.253095	9.828033	10.171967	10.081128	9.918872	30 14
47	45	9.746952	10.253048	9.828101	10.171899	10.081149	9.918851	15 13
48	57	9.746999	10.253001	9.828170	10.171830	10.081170	9.918830	3 12
49	15	9.747046	10.252954	9.828238	10.171762	10.081192	9.918808	45 11
50	30	9.747093	10.252907	9.828306	10.171694	10.081213	9.918787	30 10
51	45	9.747140	10.252860	9.828374	10.171626	10.081234	9.918766	15 9
52	58	9.747187	10.252813	9.828442	10.171558	10.081256	9.918744	2 8
53	15	9.747234	10.252766	9.828510	10.171490	10.081277	9.918723	45 7
54	30	9.747281	10.252719	9.828579	10.171421	10.081298	9.918702	30 6
55	45	9.747327	10.252673	9.828647	10.171353	10.081319	9.918681	15 5
56	59	9.747374	10.252626	9.828715	10.171285	10.081341	9.918659	1 4
57	15	9.747421	10.252579	9.828783	10.171217	10.081362	9.918638	45 3
58	30	9.747468	10.252532	9.828851	10.171149	10.081383	9.918617	30 2
59	45	9.747515	10.252485	9.828919	10.171081	10.081405	9.918595	15 1
60	60	9.747562	10.252438	9.828987	10.171013	10.081426	9.918574	0 0
sec.	min.	sine.	coscant.	tangent.	cotangent.	secant.	cosine.	sec.
3° 15'		LOG. SINES, &c.					56 deg.	

3° 16'.		LOG. SINES, &c. (t.)						34 deg.	
min.	sec.	sine.	coscant.	tangent.	cotangent.	secant.	cosec.	min.	sec.
0	0	9.747682	10.252438	9.829887	10.171013	10.081426	9.918574	60	60
1	15	9.747608	10.252392	9.829956	10.170944	10.081447	9.918553	45	59
2	30	9.747555	10.252345	9.829924	10.170876	10.081468	9.918532	30	58
3	45	9.747502	10.252298	9.829892	10.170808	10.081490	9.918510	15	57
4	1	9.747449	10.252251	9.829860	10.170740	10.081511	9.918489	59	56
5	15	9.747396	10.252204	9.829828	10.170672	10.081532	9.918468	45	55
6	30	9.747342	10.252158	9.829796	10.170604	10.081554	9.918446	30	54
7	45	9.747289	10.252111	9.829764	10.170536	10.081575	9.918425	15	53
8	2	9.747236	10.252064	9.829732	10.170468	10.081596	9.918404	58	52
9	15	9.747183	10.252017	9.829700	10.170400	10.081618	9.918382	45	51
10	30	9.747129	10.251971	9.829668	10.170332	10.081639	9.918361	30	50
11	45	9.747076	10.251924	9.829637	10.170263	10.081660	9.918340	15	49
12	3	9.747023	10.251877	9.829605	10.170195	10.081682	9.918318	57	48
13	15	9.746970	10.251830	9.829573	10.170127	10.081703	9.918297	45	47
14	30	9.746916	10.251784	9.829541	10.170059	10.081724	9.918276	30	46
15	45	9.746863	10.251737	9.829509	10.169991	10.081746	9.918254	15	45
16	4	9.746810	10.251690	9.829477	10.169923	10.081767	9.918233	56	44
17	15	9.746757	10.251643	9.829445	10.169855	10.081788	9.918212	45	43
18	30	9.746703	10.251597	9.829413	10.169787	10.081810	9.918190	30	42
19	45	9.746650	10.251550	9.829381	10.169719	10.081831	9.918169	15	41
20	5	9.746597	10.251503	9.829349	10.169651	10.081853	9.918147	55	40
21	15	9.746543	10.251457	9.829317	10.169583	10.081874	9.918126	45	39
22	30	9.746490	10.251410	9.829285	10.169515	10.081895	9.918105	30	38
23	45	9.746437	10.251363	9.829253	10.169447	10.081917	9.918083	15	37
24	6	9.746383	10.251317	9.829221	10.169379	10.081938	9.918062	54	36
25	15	9.746330	10.251270	9.829189	10.169311	10.081959	9.918041	45	35
26	30	9.746277	10.251223	9.829157	10.169243	10.081981	9.918019	30	34
27	45	9.746223	10.251177	9.829125	10.169175	10.082002	9.917998	15	33
28	7	9.746170	10.251130	9.829093	10.169107	10.082024	9.917976	53	32
29	15	9.746116	10.251084	9.829061	10.169039	10.082045	9.917955	45	31
30	30	9.746063	10.251037	9.829029	10.168971	10.082066	9.917934	30	30
31	45	9.746010	10.250990	9.828997	10.168903	10.082088	9.917912	15	29
32	8	9.745956	10.250944	9.828965	10.168835	10.082109	9.917891	52	28
33	15	9.745903	10.250897	9.828933	10.168767	10.082131	9.917869	45	27
34	30	9.745850	10.250851	9.828901	10.168699	10.082152	9.917848	30	26
35	45	9.745796	10.250804	9.828869	10.168631	10.082173	9.917827	15	25
36	9	9.745742	10.250758	9.828837	10.168563	10.082195	9.917805	51	24
37	15	9.745689	10.250711	9.828805	10.168495	10.082216	9.917784	45	23
38	30	9.745635	10.250664	9.828773	10.168427	10.082238	9.917762	30	22
39	45	9.745582	10.250618	9.828741	10.168359	10.082259	9.917741	15	21
40	10	9.745529	10.250571	9.828709	10.168291	10.082281	9.917719	50	20
41	15	9.745476	10.250525	9.828677	10.168223	10.082302	9.917698	45	19
42	30	9.745422	10.250478	9.828645	10.168155	10.082324	9.917676	30	18
43	45	9.745368	10.250432	9.828613	10.168087	10.082345	9.917655	15	17
44	11	9.745315	10.250385	9.828581	10.168019	10.082366	9.917634	49	16
45	15	9.745261	10.250339	9.828549	10.167951	10.082388	9.917612	45	15
46	30	9.745208	10.250292	9.828517	10.167883	10.082409	9.917591	30	14
47	45	9.745154	10.250246	9.828485	10.167815	10.082431	9.917569	15	13
48	12	9.745101	10.250199	9.828453	10.167747	10.082452	9.917548	48	12
49	15	9.745047	10.250153	9.828421	10.167679	10.082474	9.917526	45	11
50	30	9.744994	10.250106	9.828389	10.167611	10.082495	9.917505	30	10
51	45	9.744940	10.250060	9.828357	10.167543	10.082517	9.917483	15	9
52	13	9.744887	10.250013	9.828325	10.167475	10.082538	9.917462	47	8
53	15	9.750033	10.249967	9.828293	10.167407	10.082560	9.917440	45	7
54	30	9.750079	10.249921	9.828260	10.167340	10.082581	9.917419	30	6
55	45	9.750126	10.249874	9.828228	10.167272	10.082603	9.917397	15	5
56	14	9.750172	10.249828	9.828196	10.167204	10.082624	9.917376	46	4
57	15	9.750219	10.249781	9.828164	10.167136	10.082646	9.917354	45	3
58	30	9.750266	10.249735	9.828132	10.167068	10.082667	9.917333	30	2
59	45	9.750311	10.249689	9.828100	10.167000	10.082689	9.917311	15	1
60	15	9.750358	10.249642	9.828068	10.166932	10.082710	9.917290	45	0
min.	sec.	sine.	coscant.	tangent.	cotangent.	secant.	cosec.	min.	sec.
3° 43'.		LOG. SINES, &c.						55 deg.	

2° 17'		LOG. SINES, &c. (L.)						34 deg.	
sec.	"	sine.	cosine.	tangent.	cotangent.	secant.	cosec.		
0	15	9.750358	10.249642	9.833008	10.166992	10.082710	9.917290	45	
1	15	9.750404	10.249596	9.833136	10.166864	10.082732	9.917268	45	
2	30	9.750461	10.249549	9.833204	10.166796	10.082753	9.917247	30	
3	45	9.750497	10.249503	9.833271	10.166729	10.082775	9.917225	15	
4	16	9.750543	10.249457	9.833339	10.166661	10.082796	9.917204	41	
5	15	9.750590	10.249410	9.833407	10.166593	10.082818	9.917182	45	
6	30	9.750636	10.249364	9.833475	10.166525	10.082839	9.917161	30	
7	45	9.750682	10.249318	9.833543	10.166457	10.082861	9.917139	15	
8	17	9.750729	10.249271	9.833611	10.166389	10.082882	9.917118	43	
9	15	9.750775	10.249225	9.833679	10.166321	10.082904	9.917096	45	
10	30	9.750821	10.249179	9.833747	10.166253	10.082925	9.917075	30	
11	45	9.750868	10.249132	9.833814	10.166186	10.082947	9.917053	15	
12	18	9.750914	10.249086	9.833882	10.166118	10.082968	9.917032	42	
13	15	9.750960	10.249040	9.833950	10.166050	10.082990	9.917010	45	
14	30	9.751007	10.248993	9.834018	10.165982	10.083011	9.916989	30	
15	45	9.751053	10.248947	9.834086	10.165914	10.083033	9.916967	15	
16	19	9.751099	10.248901	9.834154	10.165846	10.083055	9.916945	41	
17	15	9.751145	10.248855	9.834221	10.165779	10.083076	9.916924	45	
18	30	9.751192	10.248808	9.834289	10.165711	10.083098	9.916902	30	
19	45	9.751238	10.248762	9.834357	10.165643	10.083119	9.916881	15	
20	20	9.751284	10.248716	9.834425	10.165575	10.083141	9.916859	10	
21	15	9.751330	10.248670	9.834493	10.165507	10.083162	9.916838	45	
22	30	9.751377	10.248623	9.834560	10.165440	10.083184	9.916816	30	
23	45	9.751423	10.248577	9.834628	10.165372	10.083206	9.916794	15	
24	21	9.751469	10.248531	9.834696	10.165304	10.083227	9.916773	39	
25	15	9.751515	10.248485	9.834764	10.165236	10.083249	9.916751	45	
26	30	9.751561	10.248439	9.834832	10.165168	10.083270	9.916730	30	
27	45	9.751608	10.248392	9.834899	10.165101	10.083292	9.916708	15	
28	22	9.751654	10.248346	9.834967	10.165033	10.083313	9.916687	38	
29	15	9.751700	10.248300	9.835035	10.164965	10.083335	9.916665	45	
30	30	9.751746	10.248254	9.835103	10.164897	10.083357	9.916643	30	
31	45	9.751792	10.248208	9.835171	10.164829	10.083378	9.916622	15	
32	23	9.751838	10.248162	9.835239	10.164762	10.083399	9.916600	37	
33	15	9.751885	10.248115	9.835306	10.164694	10.083421	9.916579	45	
34	30	9.751931	10.248069	9.835374	10.164626	10.083443	9.916557	30	
35	45	9.751977	10.248023	9.835442	10.164558	10.083465	9.916535	15	
36	24	9.752023	10.247977	9.835509	10.164491	10.083486	9.916514	36	
37	15	9.752069	10.247931	9.835577	10.164423	10.083508	9.916492	45	
38	30	9.752115	10.247885	9.835645	10.164355	10.083530	9.916470	30	
39	45	9.752161	10.247839	9.835713	10.164287	10.083551	9.916449	15	
40	25	9.752207	10.247793	9.835780	10.164220	10.083573	9.916427	35	
41	15	9.752254	10.247746	9.835848	10.164152	10.083595	9.916405	45	
42	30	9.752300	10.247700	9.835916	10.164084	10.083616	9.916384	30	
43	45	9.752346	10.247654	9.835984	10.164016	10.083638	9.916362	15	
44	26	9.752392	10.247608	9.836051	10.163949	10.083659	9.916341	34	
45	15	9.752438	10.247562	9.836119	10.163881	10.083681	9.916319	45	
46	30	9.752484	10.247516	9.836187	10.163813	10.083703	9.916297	30	
47	45	9.752530	10.247470	9.836254	10.163746	10.083724	9.916276	15	
48	27	9.752576	10.247424	9.836322	10.163678	10.083746	9.916254	33	
49	15	9.752622	10.247378	9.836390	10.163610	10.083768	9.916232	45	
50	30	9.752667	10.247332	9.836457	10.163543	10.083789	9.916211	30	
51	45	9.752714	10.247286	9.836525	10.163475	10.083811	9.916189	15	
52	28	9.752760	10.247240	9.836593	10.163407	10.083833	9.916167	32	
53	15	9.752806	10.247194	9.836661	10.163339	10.083854	9.916146	45	
54	30	9.752852	10.247148	9.836728	10.163272	10.083876	9.916124	30	
55	45	9.752898	10.247102	9.836796	10.163204	10.083898	9.916102	15	
56	29	9.752944	10.247056	9.836864	10.163136	10.083920	9.916080	31	
57	15	9.752990	10.247010	9.836931	10.163069	10.083941	9.916059	45	
58	30	9.753036	10.246964	9.836999	10.163001	10.083963	9.916037	30	
59	45	9.753082	10.246918	9.837067	10.162933	10.083985	9.916015	15	
60	30	9.753128	10.246872	9.837134	10.162866	10.084006	9.915994	30	
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.		
3° 42'		LOG. SINES, &c.						55 deg.	

8° 18'		LOG. SINES, &c. (t.)					34 deg.	
	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.		sec.
30	9.753128	10.246872	9.837134	10.162866	10.084006	9.915994	30	60
15	9.753174	10.246826	9.837202	10.162798	10.084028	9.915972	45	59
30	9.753220	10.246780	9.837270	10.162730	10.084050	9.915950	30	58
45	9.753266	10.246734	9.837337	10.162663	10.084071	9.915929	15	57
31	9.753312	10.246688	9.837405	10.162595	10.084093	9.915907	29	56
15	9.753358	10.246642	9.837473	10.162527	10.084115	9.915885	45	55
30	9.753404	10.246596	9.837540	10.162460	10.084137	9.915863	30	54
45	9.753449	10.246551	9.837608	10.162392	10.084158	9.915842	15	53
32	9.753495	10.246505	9.837675	10.162325	10.084180	9.915820	28	52
15	9.753541	10.246459	9.837743	10.162257	10.084202	9.915798	45	51
30	9.753587	10.246413	9.837811	10.162189	10.084224	9.915776	30	50
45	9.753633	10.246367	9.837878	10.162122	10.084245	9.915755	15	49
33	9.753679	10.246321	9.837946	10.162054	10.084267	9.915733	27	48
15	9.753725	10.246275	9.838014	10.161986	10.084289	9.915711	45	47
30	9.753771	10.246229	9.838081	10.161919	10.084311	9.915689	30	46
45	9.753816	10.246184	9.838149	10.161851	10.084332	9.915668	15	45
34	9.753862	10.246138	9.838216	10.161784	10.084354	9.915646	26	44
15	9.753908	10.246092	9.838284	10.161716	10.084376	9.915624	45	43
30	9.753954	10.246046	9.838352	10.161648	10.084398	9.915602	30	42
45	9.754000	10.246000	9.838419	10.161581	10.084419	9.915581	15	41
35	9.754046	10.245954	9.838487	10.161513	10.084441	9.915559	25	40
15	9.754091	10.245909	9.838554	10.161446	10.084463	9.915537	45	39
30	9.754137	10.245863	9.838622	10.161378	10.084485	9.915515	30	38
45	9.754183	10.245817	9.838689	10.161311	10.084506	9.915494	15	37
36	9.754229	10.245771	9.838757	10.161243	10.084528	9.915472	24	36
15	9.754275	10.245725	9.838825	10.161175	10.084550	9.915450	45	35
30	9.754320	10.245680	9.838892	10.161108	10.084572	9.915428	30	34
45	9.754366	10.245634	9.838960	10.161040	10.084594	9.915406	15	33
37	9.754412	10.245588	9.839027	10.160973	10.084615	9.915385	23	32
15	9.754458	10.245542	9.839095	10.160905	10.084637	9.915363	45	31
30	9.754503	10.245497	9.839162	10.160838	10.084659	9.915341	30	30
45	9.754549	10.245451	9.839230	10.160770	10.084681	9.915319	15	29
38	9.754595	10.245405	9.839297	10.160703	10.084703	9.915297	22	28
15	9.754641	10.245359	9.839365	10.160635	10.084724	9.915276	45	27
30	9.754686	10.245314	9.839433	10.160567	10.084746	9.915254	30	26
45	9.754732	10.245268	9.839500	10.160500	10.084763	9.915232	15	25
39	9.754778	10.245222	9.839568	10.160432	10.084790	9.915210	21	24
15	9.754823	10.245177	9.839635	10.160365	10.084812	9.915188	45	23
30	9.754869	10.245131	9.839703	10.160297	10.084834	9.915166	30	22
45	9.754915	10.245085	9.839770	10.160230	10.084855	9.915145	15	21
40	9.754960	10.245040	9.839838	10.160162	10.084877	9.915123	20	20
15	9.755006	10.244994	9.839905	10.160095	10.084899	9.915101	45	19
30	9.755052	10.244948	9.839973	10.160027	10.084921	9.915079	30	18
45	9.755097	10.244903	9.840040	10.159960	10.084943	9.915057	15	17
41	9.755143	10.244857	9.840108	10.159892	10.084965	9.915035	19	16
15	9.755189	10.244811	9.840175	10.159825	10.084987	9.915013	45	15
30	9.755234	10.244766	9.840243	10.159757	10.085008	9.914992	30	14
45	9.755280	10.244720	9.840310	10.159690	10.085030	9.914970	15	13
42	9.755326	10.244674	9.840378	10.159622	10.085052	9.914948	18	12
15	9.755371	10.244629	9.840445	10.159555	10.085074	9.914926	45	11
30	9.755417	10.244583	9.840513	10.159487	10.085096	9.914904	30	10
45	9.755462	10.244538	9.840580	10.159420	10.085118	9.914882	15	9
43	9.755508	10.244492	9.840647	10.159353	10.085140	9.914860	17	8
15	9.755553	10.244447	9.840715	10.159285	10.085162	9.914838	45	7
30	9.755599	10.244401	9.840782	10.159218	10.085183	9.914817	30	6
45	9.755645	10.244355	9.840850	10.159150	10.085205	9.914795	15	5
44	9.755690	10.244310	9.840917	10.159083	10.085227	9.914773	16	4
15	9.755736	10.244264	9.840985	10.159015	10.085249	9.914751	45	3
30	9.755781	10.244219	9.841052	10.158948	10.085271	9.914729	30	2
45	9.755827	10.244173	9.841120	10.158880	10.085293	9.914707	15	1
45	9.755872	10.244128	9.841187	10.158813	10.085315	9.914685	15	0
	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.		sec.
3° 41'		LOG. SINES, &c.					55 deg.	

2 ^h 19 ^m .		LOG. SINES, &c. (t.)						84 deg.		
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	'	sec
0	45	9.755872	10.244128	9.841187	10.158813	10.085315	9.914685	15		60
1	15	9.755918	10.244082	9.841255	10.158745	10.085337	9.914663	45		59
2	30	9.755963	10.244037	9.841322	10.158678	10.085359	9.914641	30		58
3	45	9.756009	10.243991	9.841389	10.158611	10.085381	9.914619	15		57
4	46	9.756054	10.243946	9.841457	10.158543	10.085402	9.914598	14		56
5	15	9.756100	10.243900	9.841524	10.158476	10.085424	9.914576	45		55
6	30	9.756145	10.243855	9.841592	10.158408	10.085446	9.914554	30		54
7	45	9.756191	10.243809	9.841659	10.158341	10.085468	9.914532	15		53
8	47	9.756236	10.243764	9.841726	10.158274	10.085490	9.914510	13		52
9	15	9.756282	10.243718	9.841794	10.158206	10.085512	9.914488	45		51
10	30	9.756327	10.243673	9.841861	10.158139	10.085534	9.914466	30		50
11	45	9.756373	10.243627	9.841929	10.158071	10.085556	9.914444	15		49
12	48	9.756418	10.243582	9.841996	10.158004	10.085578	9.914422	12		48
13	15	9.756464	10.243536	9.842063	10.157937	10.085600	9.914400	45		47
14	30	9.756509	10.243491	9.842131	10.157869	10.085622	9.914378	30		46
15	45	9.756554	10.243446	9.842198	10.157802	10.085644	9.914356	15		45
16	49	9.756600	10.243400	9.842266	10.157734	10.085666	9.914334	11		44
17	15	9.756645	10.243355	9.842333	10.157667	10.085688	9.914312	45		43
18	30	9.756691	10.243309	9.842400	10.157600	10.085710	9.914290	30		42
19	45	9.756736	10.243264	9.842468	10.157532	10.085732	9.914268	15		41
20	50	9.756781	10.243219	9.842535	10.157465	10.085754	9.914246	10		40
21	15	9.756827	10.243173	9.842602	10.157398	10.085776	9.914224	45		39
22	30	9.756872	10.243128	9.842670	10.157330	10.085798	9.914202	30		38
23	45	9.756918	10.243082	9.842737	10.157263	10.085820	9.914180	15		37
24	51	9.756963	10.243037	9.842805	10.157195	10.085842	9.914158	9		36
25	15	9.757008	10.242992	9.842872	10.157128	10.085864	9.914136	45		35
26	30	9.757054	10.242946	9.842939	10.157061	10.085886	9.914114	30		34
27	45	9.757099	10.242901	9.843007	10.156993	10.085908	9.914092	15		33
28	52	9.757144	10.242856	9.843074	10.156926	10.085930	9.914070	8		32
29	15	9.757190	10.242810	9.843141	10.156859	10.085952	9.914048	45		31
30	30	9.757235	10.242765	9.843209	10.156791	10.085974	9.914026	30		30
31	45	9.757280	10.242720	9.843276	10.156724	10.085996	9.914004	15		29
32	53	9.757326	10.242674	9.843343	10.156657	10.086018	9.913982	7		28
33	15	9.757371	10.242629	9.843411	10.156589	10.086040	9.913960	45		27
34	30	9.757416	10.242584	9.843478	10.156522	10.086062	9.913938	30		26
35	45	9.757461	10.242539	9.843545	10.156455	10.086084	9.913916	15		25
36	54	9.757507	10.242493	9.843612	10.156388	10.086106	9.913894	6		24
37	15	9.757552	10.242448	9.843680	10.156320	10.086128	9.913872	45		23
38	30	9.757597	10.242403	9.843747	10.156253	10.086150	9.913850	30		22
39	45	9.757643	10.242357	9.843814	10.156186	10.086172	9.913828	15		21
40	55	9.757688	10.242312	9.843882	10.156118	10.086194	9.913806	5		20
41	15	9.757733	10.242267	9.843949	10.156051	10.086216	9.913784	45		19
42	30	9.757778	10.242222	9.844016	10.155984	10.086238	9.913762	30		18
43	45	9.757823	10.242177	9.844083	10.155917	10.086260	9.913740	15		17
44	56	9.757869	10.242131	9.844151	10.155849	10.086282	9.913718	4		16
45	15	9.757914	10.242086	9.844218	10.155782	10.086304	9.913696	45		15
46	30	9.757959	10.242041	9.844285	10.155715	10.086326	9.913674	30		14
47	45	9.758004	10.241996	9.844353	10.155647	10.086348	9.913652	15		13
48	57	9.758049	10.241951	9.844420	10.155580	10.086370	9.913630	3		12
49	15	9.758095	10.241905	9.844487	10.155513	10.086392	9.913608	45		11
50	30	9.758140	10.241860	9.844554	10.155446	10.086415	9.913585	30		10
51	45	9.758185	10.241815	9.844622	10.155378	10.086437	9.913563	15		9
52	58	9.758230	10.241770	9.844689	10.155311	10.086459	9.913541	2		8
53	15	9.758275	10.241725	9.844756	10.155244	10.086481	9.913519	45		7
54	30	9.758320	10.241680	9.844823	10.155177	10.086503	9.913497	30		6
55	45	9.758366	10.241634	9.844891	10.155109	10.086525	9.913475	15		5
56	59	9.758411	10.241589	9.844958	10.155042	10.086547	9.913453	1		4
57	15	9.758456	10.241544	9.845025	10.154975	10.086569	9.913431	45		3
58	30	9.758501	10.241499	9.845092	10.154908	10.086591	9.913409	30		2
59	45	9.758546	10.241454	9.845160	10.154840	10.086613	9.913387	15		1
60	60	9.758591	10.241409	9.845227	10.154773	10.086636	9.913364	0		0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	'	sec.
3 ^h 40 ^m .		LOG. SINES, &c.						55 deg.		

2 ^d 20 ^m .		LOG. SINES, &c. (t.)					35 deg	
"	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	sec.
0		9.758591	10.241409	9.845227	10.154773	10.086636	9.913364	60
15		9.758636	10.241364	9.845294	10.154706	10.086658	9.913342	59
30		9.758681	10.241319	9.845361	10.154639	10.086680	9.913320	58
45		9.758727	10.241273	9.845428	10.154572	10.086702	9.913298	57
1		9.758772	10.241228	9.845496	10.154504	10.086724	9.913276	56
15		9.758817	10.241183	9.845563	10.154437	10.086746	9.913254	55
30		9.758862	10.241138	9.845630	10.154370	10.086768	9.913232	54
45		9.758907	10.241093	9.845697	10.154303	10.086790	9.913210	53
2		9.758952	10.241048	9.845764	10.154236	10.086813	9.913187	52
15		9.758997	10.241003	9.845832	10.154168	10.086835	9.913165	51
30		9.759042	10.240958	9.845899	10.154101	10.086857	9.913143	50
45		9.759087	10.240913	9.845966	10.154034	10.086879	9.913121	49
3		9.759132	10.240868	9.846033	10.153967	10.086901	9.913099	48
15		9.759177	10.240823	9.846100	10.153900	10.086923	9.913077	47
30		9.759222	10.240778	9.846167	10.153833	10.086945	9.913055	46
45		9.759267	10.240733	9.846235	10.153765	10.086968	9.913032	45
4		9.759312	10.240688	9.846302	10.153698	10.086990	9.913010	44
15		9.759357	10.240643	9.846369	10.153631	10.087012	9.912988	43
30		9.759402	10.240598	9.846436	10.153564	10.087034	9.912966	42
45		9.759447	10.240553	9.846503	10.153497	10.087056	9.912944	41
5		9.759492	10.240508	9.846570	10.153430	10.087079	9.912921	40
15		9.759537	10.240463	9.846638	10.153362	10.087101	9.912899	39
30		9.759582	10.240418	9.846705	10.153295	10.087123	9.912877	38
45		9.759627	10.240373	9.846772	10.153228	10.087145	9.912855	37
6		9.759672	10.240328	9.846839	10.153161	10.087167	9.912833	36
15		9.759717	10.240283	9.846906	10.153094	10.087189	9.912811	35
30		9.759762	10.240238	9.846973	10.153027	10.087212	9.912788	34
45		9.759807	10.240193	9.847040	10.152960	10.087234	9.912766	33
7		9.759851	10.240149	9.847107	10.152893	10.087256	9.912744	32
15		9.759896	10.240104	9.847175	10.152825	10.087278	9.912722	31
30		9.759941	10.240059	9.847242	10.152758	10.087301	9.912699	30
45		9.759986	10.240014	9.847309	10.152691	10.087323	9.912677	29
8		9.760031	10.239969	9.847376	10.152624	10.087345	9.912655	28
15		9.760076	10.239924	9.847443	10.152557	10.087367	9.912633	27
30		9.760121	10.239879	9.847510	10.152490	10.087389	9.912611	26
45		9.760166	10.239834	9.847577	10.152423	10.087412	9.912588	25
9		9.760211	10.239789	9.847644	10.152356	10.087434	9.912566	24
15		9.760255	10.239745	9.847711	10.152289	10.087456	9.912544	23
30		9.760300	10.239700	9.847779	10.152221	10.087478	9.912522	22
45		9.760345	10.239655	9.847846	10.152154	10.087501	9.912499	21
10		9.760390	10.239610	9.847913	10.152087	10.087523	9.912477	20
15		9.760435	10.239565	9.847980	10.152020	10.087545	9.912455	19
30		9.760480	10.239520	9.848047	10.151953	10.087567	9.912433	18
45		9.760524	10.239476	9.848114	10.151886	10.087590	9.912410	17
11		9.760569	10.239431	9.848181	10.151819	10.087612	9.912388	16
15		9.760614	10.239386	9.848248	10.151752	10.087634	9.912366	15
30		9.760659	10.239341	9.848315	10.151685	10.087656	9.912344	14
45		9.760703	10.239297	9.848382	10.151618	10.087679	9.912321	13
12		9.760748	10.239252	9.848449	10.151551	10.087701	9.912299	12
15		9.760793	10.239207	9.848516	10.151484	10.087723	9.912277	11
30		9.760838	10.239162	9.848583	10.151417	10.087746	9.912254	10
45		9.760883	10.239117	9.848650	10.151350	10.087768	9.912232	9
13		9.760927	10.239073	9.848717	10.151283	10.087790	9.912210	8
15		9.760972	10.239028	9.848784	10.151216	10.087812	9.912188	7
30		9.761017	10.238983	9.848851	10.151149	10.087835	9.912165	6
45		9.761062	10.238938	9.848918	10.151082	10.087857	9.912143	5
14		9.761106	10.238894	9.848985	10.151015	10.087879	9.912121	4
15		9.761151	10.238849	9.849053	10.150947	10.087902	9.912098	3
30		9.761196	10.238804	9.849120	10.150880	10.087924	9.912076	2
45		9.761240	10.238760	9.849187	10.150813	10.087946	9.912054	1
15		9.761285	10.238715	9.849254	10.150746	10.087969	9.912031	0
"	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	sec.
3 ^d 3 ^m .		LOG. SINES, &c.					54 deg	

21°		LOG. SINES, &c. (t)				35 deg.		
sec.		sine	coscant.	logant.	colongant.	secant.	cotang.	sec.
0	15	9.761285	10.238715	9.849254	10.150746	10.087969	9.912031	45
1	15	9.761330	10.238670	9.849321	10.150679	10.087991	9.912009	45
2	30	9.761374	10.238626	9.849388	10.150612	10.088013	9.911987	30
3	45	9.761419	10.238581	9.849455	10.150545	10.088036	9.911964	15
4	16	9.761464	10.238536	9.849522	10.150478	10.088058	9.911942	44
5	15	9.761508	10.238492	9.849589	10.150411	10.088080	9.911920	45
6	30	9.761553	10.238447	9.849656	10.150344	10.088103	9.911897	30
7	45	9.761598	10.238403	9.849723	10.150277	10.088125	9.911875	15
8	17	9.761642	10.238358	9.849790	10.150210	10.088147	9.911853	43
9	15	9.761687	10.238313	9.849856	10.150144	10.088170	9.911830	45
10	30	9.761732	10.238268	9.849923	10.150077	10.088192	9.911808	30
11	45	9.761776	10.238224	9.849990	10.150010	10.088214	9.911786	15
12	18	9.761821	10.238179	9.850057	10.149943	10.088237	9.911763	42
13	15	9.761865	10.238135	9.850124	10.149876	10.088259	9.911741	45
14	30	9.761910	10.238090	9.850191	10.149809	10.088281	9.911719	30
15	45	9.761955	10.238045	9.850258	10.149742	10.088304	9.911696	15
16	19	9.761999	10.238001	9.850325	10.149675	10.088326	9.911674	41
17	15	9.762044	10.237956	9.850392	10.149608	10.088349	9.911651	45
18	30	9.762088	10.237912	9.850459	10.149541	10.088371	9.911629	30
19	45	9.762133	10.237867	9.850526	10.149474	10.088393	9.911607	15
20	20	9.762177	10.237823	9.850593	10.149407	10.088416	9.911584	40
21	15	9.762222	10.237778	9.850660	10.149340	10.088438	9.911562	35
22	30	9.762267	10.237733	9.850727	10.149273	10.088460	9.911540	30
23	45	9.762311	10.237689	9.850794	10.149206	10.088483	9.911517	15
24	21	9.762356	10.237644	9.850861	10.149139	10.088505	9.911495	39
25	15	9.762400	10.237600	9.850928	10.149072	10.088528	9.911472	45
26	30	9.762445	10.237555	9.850995	10.149005	10.088550	9.911450	30
27	45	9.762489	10.237511	9.851062	10.148938	10.088572	9.911428	15
28	22	9.762534	10.237466	9.851128	10.148872	10.088595	9.911405	38
29	15	9.762578	10.237422	9.851195	10.148805	10.088617	9.911383	45
30	30	9.762623	10.237377	9.851262	10.148738	10.088640	9.911360	30
31	45	9.762667	10.237333	9.851329	10.148671	10.088662	9.911338	15
32	23	9.762712	10.237288	9.851396	10.148604	10.088685	9.911315	37
33	15	9.762756	10.237244	9.851463	10.148537	10.088707	9.911293	45
34	30	9.762800	10.237200	9.851530	10.148470	10.088729	9.911271	30
35	45	9.762845	10.237156	9.851597	10.148403	10.088752	9.911248	15
36	24	9.762889	10.237111	9.851664	10.148336	10.088774	9.911226	36
37	15	9.762934	10.237066	9.851731	10.148269	10.088797	9.911203	45
38	30	9.762978	10.237022	9.851797	10.148203	10.088819	9.911181	30
39	45	9.763023	10.236977	9.851864	10.148136	10.088842	9.911158	15
40	25	9.763067	10.236933	9.851931	10.148069	10.088864	9.911136	35
41	15	9.763111	10.236889	9.851998	10.148002	10.088887	9.911113	45
42	30	9.763156	10.236844	9.852065	10.147935	10.088909	9.911091	30
43	45	9.763200	10.236800	9.852132	10.147868	10.088932	9.911068	15
44	26	9.763245	10.236755	9.852199	10.147801	10.088954	9.911046	34
45	15	9.763289	10.236711	9.852265	10.147735	10.088976	9.911024	45
46	30	9.763333	10.236667	9.852332	10.147668	10.088999	9.911001	30
47	45	9.763378	10.236622	9.852399	10.147601	10.089021	9.910979	15
48	27	9.763422	10.236578	9.852466	10.147534	10.089044	9.910956	33
49	15	9.763467	10.236533	9.852533	10.147467	10.089066	9.910934	45
50	30	9.763511	10.236489	9.852600	10.147400	10.089089	9.910911	30
51	45	9.763555	10.236445	9.852667	10.147333	10.089111	9.910889	15
52	28	9.763600	10.236400	9.852733	10.147267	10.089134	9.910866	32
53	15	9.763644	10.236356	9.852800	10.147200	10.089156	9.910844	45
54	30	9.763688	10.236312	9.852867	10.147133	10.089179	9.910821	30
55	45	9.763733	10.236267	9.852934	10.147066	10.089201	9.910799	15
56	29	9.763777	10.236223	9.853001	10.146999	10.089224	9.910776	31
57	15	9.763821	10.236179	9.853068	10.146932	10.089246	9.910754	45
58	30	9.763865	10.236135	9.853134	10.146866	10.089269	9.910731	30
59	45	9.763910	10.236090	9.853201	10.146799	10.089291	9.910709	15
60	30	9.763954	10.236046	9.853268	10.146732	10.089314	9.910686	30
sec.		sine	coscant.	logant.	colongant.	secant.	cotang.	sec.
3° 38'		LOG. SINES, &c.				54 deg.		

22°.		LOG. SINES, &c. (t.)					35 deg.	
	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.		sec.
30	9.763964	10.236046	9.853268	10.146732	10.089314	9.910686	30	60
15	9.763998	10.236002	9.853335	10.146665	10.089337	9.910663	45	59
30	9.764043	10.235957	9.853402	10.146598	10.089359	9.910641	30	58
45	9.764087	10.235913	9.853468	10.146532	10.089382	9.910618	15	57
31	9.764131	10.235869	9.853535	10.146465	10.089404	9.910596	29	56
15	9.764175	10.235825	9.853602	10.146398	10.089427	9.910573	45	55
30	9.764220	10.235780	9.853669	10.146331	10.089449	9.910551	30	54
45	9.764264	10.235736	9.853736	10.146264	10.089472	9.910528	15	53
32	9.764308	10.235692	9.853802	10.146198	10.089494	9.910506	28	52
15	9.764352	10.235648	9.853869	10.146131	10.089517	9.910483	45	51
30	9.764396	10.235604	9.853936	10.146064	10.089539	9.910461	30	50
45	9.764441	10.235559	9.854003	10.145997	10.089562	9.910438	15	49
33	9.764485	10.235515	9.854069	10.145931	10.089585	9.910415	27	48
15	9.764529	10.235471	9.854136	10.145864	10.089607	9.910393	45	47
30	9.764573	10.235427	9.854203	10.145797	10.089630	9.910370	30	46
45	9.764617	10.235383	9.854270	10.145730	10.089652	9.910348	15	45
34	9.764662	10.235338	9.854336	10.145664	10.089675	9.910325	26	44
15	9.764706	10.235294	9.854403	10.145597	10.089697	9.910303	45	43
30	9.764750	10.235250	9.854470	10.145530	10.089720	9.910280	30	42
45	9.764794	10.235206	9.854537	10.145463	10.089743	9.910257	15	41
35	9.764838	10.235162	9.854603	10.145397	10.089765	9.910235	25	40
15	9.764882	10.235118	9.854670	10.145330	10.089788	9.910212	45	39
30	9.764926	10.235074	9.854737	10.145263	10.089810	9.910190	30	38
45	9.764971	10.235029	9.854804	10.145196	10.089833	9.910167	15	37
36	9.765015	10.234985	9.854870	10.145130	10.089856	9.910144	24	36
15	9.765059	10.234941	9.854937	10.145063	10.089878	9.910122	45	35
30	9.765103	10.234897	9.855004	10.144996	10.089901	9.910099	30	34
45	9.765147	10.234853	9.855070	10.144930	10.089924	9.910076	15	33
37	9.765191	10.234809	9.855137	10.144863	10.089946	9.910054	23	32
15	9.765235	10.234765	9.855204	10.144796	10.089969	9.910031	45	31
30	9.765279	10.234721	9.855271	10.144729	10.089991	9.910009	30	30
45	9.765323	10.234677	9.855337	10.144663	10.090014	9.909986	15	29
38	9.765367	10.234633	9.855404	10.144596	10.090037	9.909963	22	28
15	9.765411	10.234589	9.855471	10.144529	10.090059	9.909941	45	27
30	9.765455	10.234545	9.855537	10.144463	10.090082	9.909918	30	26
45	9.765500	10.234500	9.855604	10.144396	10.090105	9.909895	15	25
39	9.765544	10.234456	9.855671	10.144329	10.090127	9.909873	21	24
15	9.765588	10.234412	9.855737	10.144263	10.090150	9.909850	45	23
30	9.765632	10.234368	9.855804	10.144196	10.090173	9.909827	30	22
45	9.765676	10.234324	9.855871	10.144129	10.090195	9.909805	15	21
40	9.765720	10.234280	9.855938	10.144062	10.090218	9.909782	20	20
15	9.765764	10.234236	9.856004	10.143996	10.090241	9.909759	45	19
30	9.765808	10.234192	9.856071	10.143929	10.090263	9.909737	30	18
45	9.765852	10.234148	9.856138	10.143862	10.090286	9.909714	15	17
41	9.765896	10.234104	9.856204	10.143796	10.090309	9.909691	19	16
15	9.765940	10.234060	9.856271	10.143729	10.090331	9.909669	45	15
30	9.765984	10.234016	9.856337	10.143663	10.090354	9.909646	30	14
45	9.766028	10.233972	9.856404	10.143596	10.090377	9.909623	15	13
42	9.766071	10.233929	9.856471	10.143529	10.090399	9.909601	18	12
15	9.766115	10.233885	9.856537	10.143463	10.090422	9.909578	45	11
30	9.766159	10.233841	9.856604	10.143396	10.090445	9.909555	30	10
45	9.766203	10.233797	9.856671	10.143329	10.090467	9.909533	15	9
43	9.766247	10.233753	9.856737	10.143263	10.090490	9.909510	17	8
15	9.766291	10.233709	9.856804	10.143196	10.090513	9.909487	45	7
30	9.766335	10.233665	9.856871	10.143129	10.090536	9.909464	30	6
45	9.766379	10.233621	9.856937	10.143063	10.090558	9.909442	15	5
44	9.766423	10.233577	9.857004	10.142996	10.090581	9.909419	16	4
15	9.766467	10.233533	9.857070	10.142930	10.090604	9.909396	45	3
30	9.766511	10.233489	9.857137	10.142863	10.090626	9.909374	30	2
45	9.766555	10.233445	9.857204	10.142796	10.090649	9.909351	15	1
45	9.766598	10.233402	9.857270	10.142730	10.090672	9.909328	15	0
	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.		sec.
37°.		LOG. SINES, &c.					54 deg	

2° 23'		LOG. SINES, &c. (t.)						35 deg.	
sec	"	sin.	cosecant.	tangent	cotangent.	secant.	cosec.	"	sec.
0	45	9.766598	10.233402	9.857279	10.142730	10.090672	9.909328	15	60
1	15	9.766642	10.233358	9.857337	10.142663	10.090695	9.909305	45	59
2	30	9.766686	10.233314	9.857404	10.142596	10.090717	9.909283	30	58
3	45	9.766730	10.233270	9.857470	10.142530	10.090740	9.909260	15	57
4	46	9.766774	10.233226	9.857537	10.142463	10.090763	9.909237	14	56
5	15	9.766818	10.233182	9.857603	10.142397	10.090786	9.909214	45	55
6	30	9.766862	10.233138	9.857670	10.142330	10.090808	9.909192	30	54
7	45	9.766905	10.233095	9.857736	10.142264	10.090831	9.909169	15	53
8	47	9.766949	10.233051	9.857803	10.142197	10.090854	9.909146	13	52
9	15	9.766993	10.233007	9.857870	10.142130	10.090877	9.909123	45	51
10	30	9.767037	10.232963	9.857936	10.142064	10.090899	9.909101	30	50
11	45	9.767081	10.232919	9.858003	10.141997	10.090922	9.909078	15	49
12	48	9.767124	10.232876	9.858069	10.141931	10.090945	9.909055	12	48
13	15	9.767168	10.232832	9.858136	10.141864	10.090968	9.909032	45	47
14	30	9.767212	10.232788	9.858202	10.141798	10.090991	9.909009	30	46
15	45	9.767256	10.232744	9.858269	10.141731	10.091013	9.908987	15	45
16	49	9.767300	10.232700	9.858336	10.141664	10.091036	9.908964	11	44
17	15	9.767343	10.232657	9.858402	10.141598	10.091059	9.908941	45	43
18	30	9.767387	10.232613	9.858469	10.141531	10.091082	9.908918	30	42
19	45	9.767431	10.232569	9.858535	10.141465	10.091105	9.908895	15	41
20	50	9.767475	10.232525	9.858602	10.141398	10.091127	9.908873	10	40
21	15	9.767518	10.232482	9.858668	10.141332	10.091150	9.908850	45	39
22	30	9.767562	10.232438	9.858735	10.141265	10.091173	9.908827	30	38
23	45	9.767606	10.232394	9.858801	10.141199	10.091196	9.908804	15	37
24	51	9.767649	10.232351	9.858868	10.141132	10.091219	9.908781	9	36
25	15	9.767693	10.232307	9.858934	10.141066	10.091241	9.908759	45	35
26	30	9.767737	10.232263	9.859001	10.140999	10.091264	9.908736	30	34
27	45	9.767780	10.232220	9.859068	10.140932	10.091287	9.908713	15	33
28	52	9.767824	10.232176	9.859134	10.140866	10.091310	9.908690	8	32
29	15	9.767868	10.232132	9.859201	10.140799	10.091333	9.908667	45	31
30	30	9.767912	10.232088	9.859267	10.140733	10.091356	9.908644	30	30
31	45	9.767955	10.232045	9.859334	10.140666	10.091378	9.908622	15	29
32	53	9.767999	10.232001	9.859400	10.140600	10.091401	9.908599	7	28
33	15	9.768043	10.231957	9.859467	10.140533	10.091424	9.908576	45	27
34	30	9.768086	10.231914	9.859533	10.140467	10.091447	9.908553	30	26
35	45	9.768130	10.231870	9.859600	10.140400	10.091470	9.908530	15	25
36	54	9.768173	10.231827	9.859666	10.140334	10.091493	9.908507	6	24
37	15	9.768217	10.231783	9.859733	10.140267	10.091516	9.908484	45	23
38	30	9.768261	10.231739	9.859799	10.140201	10.091538	9.908462	30	22
39	45	9.768304	10.231696	9.859866	10.140134	10.091561	9.908439	15	21
40	55	9.768348	10.231652	9.859932	10.140068	10.091584	9.908416	5	20
41	15	9.768392	10.231608	9.859999	10.140001	10.091607	9.908393	45	19
42	30	9.768435	10.231565	9.860065	10.139935	10.091630	9.908370	30	18
43	45	9.768479	10.231521	9.860131	10.139869	10.091653	9.908347	15	17
44	56	9.768522	10.231478	9.860198	10.139802	10.091676	9.908324	4	16
45	15	9.768566	10.231434	9.860264	10.139736	10.091699	9.908301	45	15
46	30	9.768609	10.231391	9.860331	10.139669	10.091722	9.908278	30	14
47	45	9.768653	10.231347	9.860397	10.139603	10.091744	9.908255	15	13
48	57	9.768697	10.231303	9.860464	10.139536	10.091767	9.908233	3	12
49	15	9.768740	10.231260	9.860530	10.139470	10.091790	9.908210	45	11
50	30	9.768784	10.231216	9.860597	10.139403	10.091813	9.908187	30	10
51	45	9.768827	10.231173	9.860663	10.139337	10.091836	9.908164	15	9
52	58	9.768871	10.231129	9.860730	10.139270	10.091859	9.908141	2	8
53	15	9.768914	10.231086	9.860796	10.139204	10.091882	9.908118	45	7
54	30	9.768958	10.231042	9.860862	10.139138	10.091905	9.908095	30	6
55	45	9.769001	10.230999	9.860929	10.139071	10.091928	9.908072	15	5
56	59	9.769045	10.230955	9.860995	10.139005	10.091951	9.908049	1	4
57	15	9.769088	10.230912	9.861062	10.138938	10.091974	9.908026	45	3
58	45	9.769132	10.230868	9.861128	10.138872	10.091997	9.908003	30	2
59	45	9.769176	10.230825	9.861195	10.138805	10.092019	9.907981	15	1
60	60	9.769219	10.230781	9.861261	10.138739	10.092042	9.907958	0	0
sec	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
3° 36'		LOG. SINES, &c.						54 deg.	

24 deg.		LOG. SINES, &c. (M)						36 deg.	
sec.	min.	coscant.	cosecant.	tangent.	cotangent.	secant.	cosecant.	sec.	min.
0	0	9.769219	10.230781	9.861261	10.138739	10.092042	9.907958	60	60
1	15	9.769202	10.230798	9.861327	10.138673	10.092065	9.907935	45	59
2	30	9.769186	10.230814	9.861394	10.138608	10.092088	9.907912	30	58
3	45	9.769169	10.230831	9.861460	10.138540	10.092111	9.907889	15	57
4	1	9.769153	10.230848	9.861527	10.138473	10.092134	9.907866	59	56
5	15	9.769136	10.230864	9.861593	10.138407	10.092157	9.907843	45	55
6	30	9.769120	10.230881	9.861659	10.138341	10.092180	9.907820	30	54
7	45	9.769103	10.230897	9.861726	10.138274	10.092203	9.907797	15	53
8	2	9.769087	10.230914	9.861792	10.138208	10.092226	9.907774	58	52
9	15	9.769070	10.230930	9.861859	10.138141	10.092249	9.907751	45	51
10	30	9.769054	10.230947	9.861925	10.138075	10.092272	9.907728	30	50
11	45	9.769037	10.230963	9.861991	10.138009	10.092295	9.907705	15	49
12	3	9.769021	10.230980	9.862058	10.137942	10.092318	9.907682	57	48
13	15	9.769004	10.230996	9.862124	10.137876	10.092341	9.907659	45	47
14	30	9.768988	10.231013	9.862191	10.137809	10.092364	9.907636	30	46
15	45	9.768971	10.231030	9.862257	10.137743	10.092387	9.907613	15	45
16	4	9.768955	10.231047	9.862323	10.137677	10.092410	9.907590	56	44
17	15	9.768938	10.231063	9.862390	10.137610	10.092433	9.907567	45	43
18	30	9.768922	10.231080	9.862456	10.137544	10.092456	9.907544	30	42
19	45	9.768905	10.231096	9.862522	10.137478	10.092479	9.907521	15	41
20	5	9.768889	10.231113	9.862589	10.137411	10.092502	9.907498	55	40
21	15	9.768872	10.231129	9.862655	10.137345	10.092525	9.907475	45	39
22	30	9.768856	10.231146	9.862721	10.137279	10.092548	9.907452	30	38
23	45	9.768839	10.231162	9.862788	10.137212	10.092571	9.907429	15	37
24	6	9.768823	10.231179	9.862854	10.137146	10.092594	9.907406	54	36
25	15	9.768806	10.231195	9.862920	10.137080	10.092617	9.907383	45	35
26	30	9.768790	10.231212	9.862987	10.137013	10.092640	9.907360	30	34
27	45	9.768773	10.231228	9.863053	10.136947	10.092663	9.907337	15	33
28	7	9.768757	10.231245	9.863119	10.136881	10.092686	9.907314	53	32
29	15	9.768740	10.231261	9.863186	10.136814	10.092709	9.907291	45	31
30	30	9.768724	10.231278	9.863252	10.136748	10.092732	9.907268	30	30
31	45	9.768707	10.231294	9.863318	10.136682	10.092755	9.907245	15	29
32	8	9.768691	10.231311	9.863385	10.136615	10.092778	9.907222	52	28
33	15	9.768674	10.231327	9.863451	10.136549	10.092802	9.907199	45	27
34	30	9.768658	10.231344	9.863517	10.136483	10.092825	9.907175	30	26
35	45	9.768641	10.231360	9.863584	10.136416	10.092848	9.907152	15	25
36	9	9.768625	10.231377	9.863650	10.136350	10.092871	9.907129	51	24
37	15	9.768608	10.231393	9.863716	10.136284	10.092894	9.907106	45	23
38	30	9.768592	10.231410	9.863783	10.136217	10.092917	9.907083	30	22
39	45	9.768575	10.231426	9.863849	10.136151	10.092940	9.907060	15	21
40	10	9.768559	10.231443	9.863915	10.136085	10.092963	9.907037	50	20
41	15	9.768542	10.231459	9.863981	10.136019	10.092986	9.907014	45	19
42	30	9.768526	10.231476	9.864048	10.135952	10.093009	9.906991	30	18
43	45	9.768509	10.231492	9.864114	10.135886	10.093032	9.906968	15	17
44	11	9.768493	10.231509	9.864180	10.135820	10.093055	9.906945	49	16
45	15	9.768476	10.231525	9.864247	10.135753	10.093079	9.906922	45	15
46	30	9.768460	10.231542	9.864313	10.135687	10.093102	9.906899	30	14
47	45	9.768443	10.231558	9.864379	10.135621	10.093125	9.906875	15	13
48	12	9.768427	10.231575	9.864445	10.135555	10.093148	9.906852	48	12
49	15	9.768410	10.231591	9.864512	10.135488	10.093171	9.906829	45	11
50	30	9.768394	10.231608	9.864578	10.135422	10.093194	9.906806	30	10
51	45	9.768377	10.231624	9.864644	10.135356	10.093217	9.906783	15	9
52	13	9.768361	10.231641	9.864710	10.135290	10.093240	9.906760	47	8
53	15	9.768344	10.231657	9.864777	10.135223	10.093263	9.906737	45	7
54	30	9.768328	10.231674	9.864843	10.135157	10.093287	9.906713	30	6
55	45	9.768311	10.231690	9.864909	10.135091	10.093310	9.906690	15	5
56	14	9.768295	10.231707	9.864975	10.135025	10.093333	9.906667	46	4
57	15	9.768278	10.231723	9.865042	10.134958	10.093356	9.906644	45	3
58	30	9.768262	10.231740	9.865108	10.134892	10.093379	9.906621	30	2
59	45	9.768245	10.231756	9.865174	10.134826	10.093402	9.906598	15	1
60	15	9.768229	10.231773	9.865240	10.134760	10.093426	9.906574	45	0
sec.	min.	coscant.	cosecant.	cotangent.	tangent.	secant.	cosecant.	sec.	min.
35 deg.		LOG. SINES, &c.						53 deg.	

25 25°.		LOG. SINES, &c. (L.)						36 deg.	
sec.	"	size	coscant.	langent.	cotangent.	secant.	cosine.	"	sec.
0	15	9.771815	10.228185	865240	10.134760	10.093428	9.906574	45	60
1	15	9.771858	10.228142	865307	10.134693	10.093449	9.906551	45	59
2	30	9.771901	10.228099	865373	10.134627	10.093472	9.906528	45	58
3	45	9.771944	10.228056	865439	10.134561	10.093495	9.906505	45	57
4	16	9.771987	10.228013	865505	10.134495	10.093518	9.906482	44	56
5	15	9.772030	10.227970	865571	10.134429	10.093541	9.906459	45	55
6	30	9.772073	10.227927	865638	10.134362	10.093565	9.906435	30	54
7	45	9.772116	10.227884	865704	10.134296	10.093588	9.906412	15	53
8	17	9.772159	10.227841	865770	10.134230	10.093611	9.906389	43	52
9	15	9.772202	10.227798	865836	10.134164	10.093634	9.906366	45	51
10	30	9.772245	10.227755	865903	10.134097	10.093657	9.906343	30	50
11	45	9.772288	10.227712	865969	10.134031	10.093680	9.906320	15	49
12	18	9.772331	10.227669	866035	10.133965	10.093704	9.906296	42	48
13	15	9.772374	10.227626	866101	10.133899	10.093727	9.906273	45	47
14	30	9.772417	10.227583	866167	10.133833	10.093750	9.906250	30	46
15	45	9.772460	10.227540	866233	10.133767	10.093773	9.906227	15	45
16	19	9.772503	10.227497	866300	10.133700	10.093796	9.906204	41	44
17	15	9.772546	10.227454	866366	10.133634	10.093820	9.906180	45	43
18	30	9.772589	10.227411	866432	10.133568	10.093843	9.906157	30	42
19	45	9.772632	10.227368	866498	10.133502	10.093866	9.906134	15	41
20	20	9.772675	10.227325	866564	10.133436	10.093889	9.906111	40	40
21	15	9.772718	10.227282	866631	10.133369	10.093913	9.906087	45	39
22	30	9.772761	10.227239	866697	10.133303	10.093936	9.906064	30	38
23	45	9.772804	10.227196	866763	10.133237	10.093959	9.906041	15	37
24	21	9.772847	10.227153	866829	10.133171	10.093982	9.906018	39	36
25	15	9.772890	10.227110	866895	10.133105	10.094006	9.905994	45	35
26	30	9.772933	10.227067	866961	10.133039	10.094029	9.905971	30	34
27	45	9.772976	10.227024	867028	10.132972	10.094052	9.905948	15	33
28	22	9.773018	10.226982	867094	10.132906	10.094075	9.905925	38	32
29	15	9.773061	10.226939	867160	10.132840	10.094099	9.905901	45	31
30	30	9.773104	10.226896	867226	10.132774	10.094122	9.905878	30	30
31	45	9.773147	10.226853	867292	10.132708	10.094145	9.905855	15	29
32	23	9.773190	10.226810	867358	10.132642	10.094168	9.905832	37	28
33	15	9.773233	10.226767	867424	10.132576	10.094192	9.905808	45	27
34	30	9.773276	10.226724	867490	10.132510	10.094215	9.905785	30	26
35	45	9.773318	10.226682	867557	10.132443	10.094238	9.905762	15	25
36	24	9.773361	10.226639	867623	10.132377	10.094261	9.905739	36	24
37	15	9.773404	10.226596	867689	10.132311	10.094285	9.905715	45	23
38	30	9.773447	10.226553	867755	10.132245	10.094308	9.905692	30	22
39	45	9.773490	10.226510	867821	10.132179	10.094331	9.905669	15	21
40	25	9.773533	10.226467	867887	10.132113	10.094355	9.905645	35	20
41	15	9.773575	10.226425	867953	10.132047	10.094378	9.905622	45	19
42	30	9.773618	10.226382	868019	10.131981	10.094401	9.905599	30	18
43	45	9.773661	10.226339	868086	10.131914	10.094425	9.905575	15	17
44	26	9.773704	10.226296	868152	10.131848	10.094448	9.905552	34	16
45	15	9.773747	10.226253	868218	10.131782	10.094471	9.905529	45	15
46	30	9.773789	10.226211	868284	10.131716	10.094494	9.905506	30	14
47	45	9.773832	10.226168	868350	10.131650	10.094518	9.905482	15	13
48	27	9.773875	10.226125	868416	10.131584	10.094541	9.905459	33	12
49	15	9.773918	10.226082	868482	10.131518	10.094564	9.905436	45	11
50	30	9.773960	10.226040	868548	10.131452	10.094588	9.905412	30	10
51	45	9.774003	10.225997	868614	10.131386	10.094611	9.905389	15	9
52	28	9.774046	10.225954	868680	10.131320	10.094634	9.905366	32	8
53	15	9.774089	10.225911	868746	10.131254	10.094658	9.905342	45	7
54	30	9.774131	10.225869	868812	10.131188	10.094681	9.905319	30	6
55	45	9.774174	10.225826	868879	10.131121	10.094705	9.905295	15	5
56	29	9.774217	10.225783	868945	10.131055	10.094728	9.905272	31	4
57	15	9.774259	10.225741	869011	10.130989	10.094751	9.905249	45	3
58	30	9.774302	10.225698	869077	10.130923	10.094775	9.905225	30	2
59	45	9.774345	10.225655	869143	10.130857	10.094798	9.905202	15	1
60	30	9.774388	10.225612	869209	10.130791	10.094821	9.905179	30	0
sec.	"	cosine.	secant.	tangent.	cotangent.	coscant.	sine.	"	sec.
34 34°.		LOG. SINES, &c.						53 deg.	

26°.		LOG. SINES, &c. (L.)					36 deg.	
	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.		sec.
30	9.774388	10.225612	9.869209	10.130791	10.094821	9.905179	30	60
15	9.774430	10.225570	9.869273	10.130725	10.094845	9.905155	45	59
30	9.774473	10.225527	9.869341	10.130659	10.094868	9.905132	30	58
45	9.774516	10.225484	9.869407	10.130593	10.094891	9.905109	15	57
31	9.774558	10.225442	9.869473	10.130527	10.094915	9.905085	29	56
15	9.774601	10.225399	9.869539	10.130461	10.094938	9.905062	45	55
30	9.774644	10.225356	9.869605	10.130395	10.094962	9.905038	30	54
45	9.774686	10.225314	9.869671	10.130329	10.094985	9.905015	15	53
32	9.774729	10.225271	9.869737	10.130263	10.095008	9.904992	28	52
15	9.774771	10.225229	9.869803	10.130197	10.095032	9.904968	45	51
30	9.774814	10.225186	9.869869	10.130131	10.095055	9.904945	30	50
45	9.774857	10.225143	9.869935	10.130065	10.095079	9.904921	15	49
33	9.774899	10.225101	9.870001	10.129999	10.095102	9.904898	27	48
15	9.774942	10.225058	9.870067	10.129933	10.095125	9.904875	45	47
30	9.774984	10.225016	9.870133	10.129867	10.095149	9.904851	30	46
45	9.775027	10.224973	9.870199	10.129801	10.095172	9.904828	15	45
34	9.775070	10.224930	9.870265	10.129735	10.095196	9.904804	26	44
15	9.775112	10.224888	9.870331	10.129669	10.095219	9.904781	45	43
30	9.775155	10.224845	9.870397	10.129603	10.095243	9.904757	30	42
45	9.775197	10.224803	9.870463	10.129537	10.095266	9.904734	15	41
35	9.775240	10.224760	9.870529	10.129471	10.095289	9.904711	25	40
15	9.775282	10.224718	9.870595	10.129405	10.095313	9.904687	45	39
30	9.775325	10.224675	9.870661	10.129339	10.095336	9.904664	30	38
45	9.775368	10.224632	9.870727	10.129273	10.095360	9.904640	15	37
36	9.775410	10.224590	9.870793	10.129207	10.095383	9.904617	24	36
15	9.775453	10.224547	9.870859	10.129141	10.095407	9.904593	45	35
30	9.775495	10.224505	9.870925	10.129075	10.095430	9.904570	30	34
45	9.775538	10.224462	9.870991	10.129009	10.095454	9.904546	15	33
37	9.775580	10.224420	9.871057	10.128943	10.095477	9.904523	23	32
15	9.775623	10.224377	9.871123	10.128877	10.095501	9.904499	45	31
30	9.775665	10.224335	9.871189	10.128811	10.095524	9.904476	30	30
45	9.775708	10.224292	9.871255	10.128745	10.095548	9.904452	15	29
38	9.775750	10.224250	9.871321	10.128679	10.095571	9.904429	22	28
15	9.775793	10.224207	9.871387	10.128613	10.095594	9.904406	45	27
30	9.775835	10.224165	9.871453	10.128547	10.095618	9.904382	30	26
45	9.775877	10.224123	9.871519	10.128481	10.095641	9.904359	15	25
39	9.775920	10.224080	9.871585	10.128415	10.095665	9.904335	21	24
15	9.775962	10.224038	9.871651	10.128349	10.095688	9.904312	45	23
30	9.776005	10.223995	9.871717	10.128283	10.095712	9.904288	30	22
45	9.776047	10.223953	9.871783	10.128217	10.095735	9.904265	15	21
40	9.776090	10.223910	9.871849	10.128151	10.095759	9.904241	20	20
15	9.776132	10.223868	9.871914	10.128086	10.095782	9.904218	45	19
30	9.776174	10.223826	9.871980	10.128020	10.095806	9.904194	30	18
45	9.776217	10.223783	9.872046	10.127954	10.095830	9.904170	15	17
41	9.776259	10.223741	9.872112	10.127888	10.095853	9.904147	19	16
15	9.776302	10.223698	9.872178	10.127822	10.095877	9.904123	45	15
30	9.776344	10.223656	9.872244	10.127756	10.095900	9.904100	30	14
45	9.776386	10.223614	9.872310	10.127690	10.095924	9.904076	15	13
42	9.776429	10.223571	9.872376	10.127624	10.095947	9.904053	18	12
15	9.776471	10.223529	9.872442	10.127558	10.095971	9.904029	45	11
30	9.776514	10.223486	9.872508	10.127492	10.095994	9.904006	30	10
45	9.776556	10.223444	9.872574	10.127426	10.096018	9.903982	15	9
43	9.776598	10.223402	9.872640	10.127360	10.096041	9.903959	17	8
15	9.776641	10.223359	9.872705	10.127295	10.096065	9.903935	45	7
30	9.776683	10.223317	9.872771	10.127229	10.096089	9.903911	30	6
45	9.776725	10.223275	9.872837	10.127163	10.096112	9.903888	15	5
44	9.776768	10.223232	9.872903	10.127097	10.096136	9.903864	16	4
15	9.776810	10.223190	9.872969	10.127031	10.096159	9.903841	45	3
30	9.776852	10.223148	9.873035	10.126965	10.096183	9.903817	30	2
45	9.776895	10.223105	9.873101	10.126899	10.096206	9.903794	15	1
45	9.776937	10.223063	9.873167	10.126833	10.096230	9.903770	15	0
	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.		sec.
33°.		LOG. SINES, &c.					53 deg.	

27°.		LOG. SINES, &c. (L.)						36 deg.	
sec.	"	sine.	coscant.	tangent.	cotangent.	secant.	cosecant.	"	sec.
0	45	9.776937	10.223063	9.873167	10.126833	10.096236	9.903770	15	60
1	15	9.776979	10.223021	9.873233	10.126767	10.096254	9.903746	45	59
2	30	9.777021	10.222979	9.873298	10.126702	10.096277	9.903723	30	58
3	45	9.777064	10.222936	9.873364	10.126636	10.096301	9.903699	15	57
4	46	9.777106	10.222894	9.873430	10.126570	10.096324	9.903676	14	56
5	15	9.777148	10.222852	9.873496	10.126504	10.096348	9.903652	45	55
6	30	9.777190	10.222810	9.873562	10.126438	10.096372	9.903628	30	54
7	45	9.777233	10.222767	9.873628	10.126372	10.096395	9.903605	15	53
8	47	9.777275	10.222725	9.873694	10.126306	10.096419	9.903581	13	52
9	15	9.777317	10.222683	9.873759	10.126241	10.096442	9.903558	45	51
10	30	9.777359	10.222641	9.873825	10.126175	10.096466	9.903534	30	50
11	45	9.777402	10.222598	9.873891	10.126109	10.096490	9.903510	15	49
12	48	9.777444	10.222556	9.873957	10.126043	10.096513	9.903487	12	48
13	15	9.777486	10.222514	9.874023	10.125977	10.096537	9.903463	45	47
14	30	9.777528	10.222472	9.874089	10.125911	10.096560	9.903440	30	46
15	45	9.777571	10.222429	9.874155	10.125845	10.096584	9.903416	15	45
16	49	9.777613	10.222387	9.874220	10.125780	10.096608	9.903392	11	44
17	15	9.777655	10.222345	9.874286	10.125714	10.096631	9.903369	45	43
18	30	9.777697	10.222303	9.874352	10.125648	10.096655	9.903345	30	42
19	45	9.777739	10.222261	9.874418	10.125582	10.096679	9.903321	15	41
20	50	9.777781	10.222219	9.874484	10.125516	10.096702	9.903298	10	40
21	15	9.777824	10.222176	9.874550	10.125450	10.096726	9.903274	45	39
22	30	9.777866	10.222134	9.874616	10.125385	10.096750	9.903250	30	38
23	45	9.777908	10.222092	9.874681	10.125319	10.096773	9.903227	15	37
24	51	9.777950	10.222050	9.874747	10.125253	10.096797	9.903203	9	36
25	15	9.777992	10.222008	9.874813	10.125187	10.096821	9.903179	45	35
26	30	9.778034	10.221966	9.874879	10.125121	10.096844	9.903156	30	34
27	45	9.778076	10.221924	9.874944	10.125056	10.096868	9.903132	15	33
28	52	9.778119	10.221881	9.875010	10.124990	10.096892	9.903108	8	32
29	15	9.778161	10.221839	9.875076	10.124924	10.096915	9.903085	45	31
30	30	9.778203	10.221797	9.875142	10.124858	10.096939	9.903061	30	30
31	45	9.778245	10.221755	9.875208	10.124792	10.096963	9.903037	15	29
32	53	9.778287	10.221713	9.875273	10.124727	10.096986	9.903014	7	28
33	15	9.778329	10.221671	9.875339	10.124661	10.097010	9.902990	45	27
34	30	9.778371	10.221629	9.875405	10.124595	10.097034	9.902966	30	26
35	45	9.778413	10.221587	9.875471	10.124529	10.097058	9.902942	15	25
36	54	9.778455	10.221545	9.875536	10.124464	10.097081	9.902919	6	24
37	15	9.778497	10.221503	9.875602	10.124398	10.097105	9.902895	45	23
38	30	9.778539	10.221461	9.875668	10.124332	10.097129	9.902871	30	22
39	45	9.778581	10.221419	9.875734	10.124266	10.097152	9.902848	15	21
40	55	9.778623	10.221377	9.875800	10.124200	10.097176	9.902824	5	20
41	15	9.778666	10.221334	9.875865	10.124135	10.097200	9.902800	45	19
42	30	9.778708	10.221292	9.875931	10.124069	10.097224	9.902776	30	18
43	45	9.778750	10.221250	9.875997	10.124003	10.097247	9.902753	15	17
44	56	9.778792	10.221208	9.876063	10.123937	10.097271	9.902729	4	16
45	15	9.778834	10.221166	9.876128	10.123872	10.097295	9.902706	45	15
46	30	9.778876	10.221124	9.876194	10.123806	10.097319	9.902681	30	14
47	45	9.778918	10.221082	9.876260	10.123740	10.097342	9.902658	15	13
48	57	9.778960	10.221040	9.876326	10.123674	10.097366	9.902634	3	12
49	15	9.779002	10.220998	9.876391	10.123609	10.097390	9.902610	45	11
50	30	9.779044	10.220956	9.876457	10.123543	10.097414	9.902586	30	10
51	45	9.779086	10.220914	9.876523	10.123477	10.097437	9.902563	15	9
52	58	9.779127	10.220873	9.876589	10.123411	10.097461	9.902539	2	8
53	15	9.779169	10.220831	9.876654	10.123346	10.097485	9.902516	45	7
54	30	9.779211	10.220789	9.876720	10.123280	10.097509	9.902491	30	6
55	45	9.779253	10.220747	9.876786	10.123214	10.097532	9.902468	15	5
56	59	9.779295	10.220705	9.876851	10.123149	10.097556	9.902444	1	4
57	15	9.779337	10.220663	9.876917	10.123083	10.097580	9.902420	45	3
58	30	9.779379	10.220621	9.876983	10.123017	10.097604	9.902396	30	2
59	45	9.779422	10.220579	9.877049	10.122951	10.097628	9.902372	15	1
60	60	9.779463	10.220537	9.877114	10.122886	10.097651	9.902349	0	0
sec.	"	sine.	coscant.	tangent.	cotangent.	secant.	cosecant.	"	sec.
3° 32'.		LOG. SINES, &c.						53 deg.	

3° 28'.		LOG. SINES, &c. (t.)						37 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	0	9.779463	10.220537	9.877114	10.122886	10.097651	9.902349	60	60
1	15	9.779506	10.220495	9.877180	10.122820	10.097675	9.902325	45	59
2	30	9.779547	10.220453	9.877246	10.122754	10.097699	9.902301	30	58
3	45	9.779589	10.220411	9.877311	10.122689	10.097723	9.902277	15	57
4	1	9.779631	10.220369	9.877377	10.122623	10.097747	9.902253	59	56
5	15	9.779672	10.220328	9.877443	10.122557	10.097770	9.902230	45	55
6	30	9.779714	10.220286	9.877509	10.122491	10.097794	9.902206	30	54
7	45	9.779756	10.220244	9.877574	10.122426	10.097818	9.902182	15	53
8	2	9.779798	10.220202	9.877640	10.122360	10.097842	9.902158	58	52
9	15	9.779840	10.220160	9.877706	10.122294	10.097866	9.902134	45	51
10	30	9.779882	10.220118	9.877771	10.122229	10.097890	9.902110	30	50
11	45	9.779924	10.220076	9.877837	10.122163	10.097913	9.902087	15	49
12	3	9.779965	10.220035	9.877903	10.122097	10.097937	9.902063	57	48
13	15	9.780007	10.219993	9.877968	10.122032	10.097961	9.902039	45	47
14	30	9.780049	10.219951	9.878034	10.121966	10.097985	9.902015	30	46
15	45	9.780091	10.219909	9.878100	10.121900	10.098009	9.901991	15	45
16	4	9.780133	10.219867	9.878165	10.121835	10.098033	9.901967	56	44
17	15	9.780175	10.219825	9.878231	10.121769	10.098057	9.901943	45	43
18	30	9.780216	10.219784	9.878297	10.121703	10.098080	9.901920	30	42
19	45	9.780258	10.219742	9.878362	10.121638	10.098104	9.901896	15	41
20	5	9.780300	10.219700	9.878428	10.121572	10.098128	9.901872	55	40
21	15	9.780342	10.219658	9.878494	10.121506	10.098152	9.901848	45	39
22	30	9.780384	10.219616	9.878559	10.121441	10.098176	9.901824	30	38
23	45	9.780425	10.219575	9.878625	10.121375	10.098200	9.901800	15	37
24	6	9.780467	10.219533	9.878691	10.121309	10.098224	9.901776	54	36
25	15	9.780509	10.219491	9.878756	10.121244	10.098248	9.901752	45	35
26	30	9.780551	10.219449	9.878822	10.121178	10.098271	9.901729	30	34
27	45	9.780592	10.219408	9.878888	10.121112	10.098295	9.901705	15	33
28	7	9.780634	10.219366	9.878953	10.121047	10.098319	9.901681	53	32
29	15	9.780676	10.219324	9.879019	10.120981	10.098343	9.901657	45	31
30	30	9.780717	10.219283	9.879084	10.120916	10.098367	9.901633	30	30
31	45	9.780759	10.219241	9.879150	10.120850	10.098391	9.901609	15	29
32	8	9.780801	10.219199	9.879216	10.120784	10.098415	9.901585	52	28
33	15	9.780843	10.219157	9.879281	10.120719	10.098439	9.901561	45	27
34	30	9.780884	10.219116	9.879347	10.120653	10.098463	9.901537	30	26
35	45	9.780926	10.219074	9.879413	10.120587	10.098487	9.901513	15	25
36	9	9.780968	10.219032	9.879478	10.120522	10.098511	9.901489	51	24
37	15	9.781009	10.218991	9.879544	10.120456	10.098534	9.901466	45	23
38	30	9.781051	10.218949	9.879609	10.120391	10.098558	9.901442	30	22
39	45	9.781093	10.218907	9.879675	10.120325	10.098582	9.901418	15	21
40	10	9.781134	10.218866	9.879741	10.120259	10.098606	9.901394	50	20
41	15	9.781176	10.218824	9.879806	10.120194	10.098630	9.901370	45	19
42	30	9.781218	10.218782	9.879872	10.120128	10.098654	9.901346	30	18
43	45	9.781259	10.218741	9.879937	10.120063	10.098678	9.901322	15	17
44	11	9.781301	10.218699	9.880003	10.119997	10.098702	9.901298	49	16
45	15	9.781343	10.218657	9.880069	10.119931	10.098726	9.901274	45	15
46	30	9.781384	10.218616	9.880134	10.119866	10.098750	9.901250	30	14
47	45	9.781426	10.218574	9.880200	10.119800	10.098774	9.901226	15	13
48	12	9.781467	10.218533	9.880265	10.119735	10.098798	9.901202	48	12
49	15	9.781509	10.218491	9.880331	10.119669	10.098822	9.901178	45	11
50	30	9.781551	10.218449	9.880397	10.119603	10.098846	9.901154	30	10
51	45	9.781592	10.218408	9.880462	10.119538	10.098870	9.901130	15	9
52	13	9.781634	10.218366	9.880528	10.119472	10.098894	9.901106	47	8
53	15	9.781675	10.218325	9.880593	10.119407	10.098918	9.901082	45	7
54	30	9.781717	10.218283	9.880659	10.119341	10.098942	9.901058	30	6
55	45	9.781759	10.218241	9.880724	10.119276	10.098966	9.901034	15	5
56	14	9.781800	10.218200	9.880790	10.119210	10.098990	9.901010	46	4
57	15	9.781842	10.218158	9.880855	10.119145	10.099014	9.900986	45	3
58	30	9.781883	10.218117	9.880921	10.119079	10.099038	9.900962	30	2
59	45	9.781925	10.218075	9.880987	10.119013	10.099062	9.900938	15	1
60	15	9.781966	10.218034	9.881052	10.118948	10.099086	9.900914	45	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
3° 31'.		LOG. SINES, &c.						52 deg.	

2° 29'		LOG. SINES, &c. (t)						87 deg.	
sec.	"	alt.	coscant	tangent	cotangent	secant	cosine	"	sec.
0	15	9.781968	10.118948	9.881052	10.118948	10.099086	9.900914	45	60
1	15	9.782008	10.217992	9.881118	10.118862	10.099110	9.900890	45	59
2	15	9.782049	10.217951	9.881183	10.118817	10.099134	9.900866	30	58
3	15	9.782091	10.217909	9.881249	10.118751	10.099158	9.900842	15	57
4	16	9.782132	10.217868	9.881314	10.118686	10.099182	9.900818	44	56
5	16	9.782174	10.217826	9.881380	10.118620	10.099206	9.900794	45	55
6	16	9.782215	10.217785	9.881445	10.118555	10.099230	9.900770	30	54
7	16	9.782257	10.217743	9.881511	10.118489	10.099254	9.900746	15	53
8	17	9.782298	10.217702	9.881576	10.118424	10.099278	9.900722	43	52
9	17	9.782340	10.217660	9.881642	10.118358	10.099302	9.900698	45	51
10	17	9.782381	10.217619	9.881708	10.118292	10.099326	9.900674	30	50
11	17	9.782423	10.217577	9.881773	10.118227	10.099350	9.900650	15	49
12	18	9.782464	10.217536	9.881839	10.118161	10.099374	9.900626	42	48
13	18	9.782506	10.217494	9.881904	10.118096	10.099398	9.900602	45	47
14	18	9.782547	10.217453	9.881970	10.118030	10.099422	9.900578	30	46
15	18	9.782589	10.217411	9.882035	10.117965	10.099447	9.900553	15	45
16	19	9.782630	10.217370	9.882101	10.117899	10.099471	9.900529	41	44
17	19	9.782671	10.217329	9.882166	10.117834	10.099495	9.900505	45	43
18	19	9.782713	10.217287	9.882232	10.117768	10.099519	9.900481	30	42
19	19	9.782754	10.217246	9.882297	10.117703	10.099543	9.900457	15	41
20	20	9.782796	10.217204	9.882363	10.117637	10.099567	9.900433	40	40
21	20	9.782837	10.217163	9.882428	10.117572	10.099591	9.900409	45	39
22	20	9.782879	10.217121	9.882494	10.117506	10.099615	9.900385	30	38
23	20	9.782920	10.217080	9.882559	10.117441	10.099639	9.900361	15	37
24	21	9.782961	10.217039	9.882625	10.117375	10.099663	9.900337	39	36
25	21	9.783003	10.216997	9.882690	10.117310	10.099687	9.900313	45	35
26	21	9.783044	10.216956	9.882756	10.117244	10.099712	9.900288	30	34
27	21	9.783085	10.216915	9.882821	10.117179	10.099736	9.900264	15	33
28	22	9.783127	10.216873	9.882887	10.117113	10.099760	9.900240	38	32
29	22	9.783168	10.216832	9.882952	10.117048	10.099784	9.900216	45	31
30	22	9.783209	10.216791	9.883017	10.116983	10.099808	9.900192	30	30
31	22	9.783251	10.216749	9.883083	10.116917	10.099832	9.900168	15	29
32	23	9.783292	10.216708	9.883148	10.116852	10.099856	9.900144	37	28
33	23	9.783334	10.216666	9.883214	10.116786	10.099880	9.900120	45	27
34	23	9.783375	10.216625	9.883279	10.116721	10.099905	9.900095	30	26
35	23	9.783416	10.216584	9.883345	10.116655	10.099929	9.900071	15	25
36	24	9.783457	10.216543	9.883410	10.116590	10.099953	9.900047	36	24
37	24	9.783499	10.216501	9.883475	10.116524	10.099977	9.900023	45	23
38	24	9.783540	10.216460	9.883541	10.116459	10.100001	9.899999	30	22
39	24	9.783581	10.216419	9.883607	10.116393	10.100025	9.899975	15	21
40	25	9.783623	10.216377	9.883672	10.116328	10.100049	9.899951	35	20
41	25	9.783664	10.216336	9.883737	10.116263	10.100074	9.899926	45	19
42	25	9.783705	10.216295	9.883803	10.116197	10.100098	9.899902	30	18
43	25	9.783746	10.216254	9.883868	10.116132	10.100122	9.899878	15	17
44	26	9.783788	10.216212	9.883934	10.116066	10.100146	9.899854	34	16
45	26	9.783829	10.216171	9.883999	10.116001	10.100170	9.899830	45	15
46	26	9.783870	10.216130	9.884065	10.115935	10.100194	9.899806	30	14
47	26	9.783911	10.216089	9.884130	10.115870	10.100219	9.899781	15	13
48	27	9.783953	10.216047	9.884196	10.115804	10.100243	9.899757	33	12
49	27	9.783994	10.216006	9.884261	10.115739	10.100267	9.899733	45	11
50	27	9.784035	10.215965	9.884326	10.115674	10.100291	9.899709	30	10
51	27	9.784076	10.215924	9.884392	10.115608	10.100315	9.899685	15	9
52	28	9.784118	10.215882	9.884457	10.115543	10.100340	9.899660	32	8
53	28	9.784159	10.215841	9.884523	10.115477	10.100364	9.899636	45	7
54	28	9.784200	10.215800	9.884588	10.115412	10.100388	9.899612	30	6
55	28	9.784241	10.215759	9.884653	10.115347	10.100412	9.899588	15	5
56	29	9.784282	10.215718	9.884719	10.115281	10.100436	9.899564	31	4
57	29	9.784324	10.215676	9.884784	10.115216	10.100461	9.899539	45	3
58	29	9.784365	10.215635	9.884850	10.115150	10.100485	9.899515	30	2
59	29	9.784406	10.215594	9.884915	10.115085	10.100509	9.899491	15	1
60	30	9.784447	10.215553	9.884980	10.115020	10.100533	9.899467	30	0
alt.		cosine.	secant.	cotangent	tangent	coscant	sine		sec.
3° 30'		LOG. SINES, &c.						52 deg.	

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2° 31'		LOG. SINES, &c. (L.)						37 deg.	
arc	"	sine.	coscant.	tangent.	cotangent.	secant.	cosec.	arc	"
0	45	9.786908	10.213094	9.888900	10.111100	10.101994	10.101994	15	60
1	15	9.786946	10.213054	9.888965	10.111035	10.102018	9.897982	45	15
2	30	9.786987	10.213013	9.889030	10.110970	10.102043	9.897957	30	15
3	45	9.787028	10.212972	9.889095	10.110905	10.102067	9.897933	15	57
4	46	9.787069	10.212931	9.889160	10.110840	10.102092	9.897908	11	56
5	15	9.787109	10.212891	9.889226	10.110774	10.102116	9.897884	45	55
6	30	9.787150	10.212850	9.889291	10.110709	10.102141	9.897859	30	54
7	45	9.787191	10.212809	9.889356	10.110644	10.102165	9.897835	15	53
8	47	9.787232	10.212768	9.889421	10.110579	10.102190	9.897810	13	52
9	15	9.787272	10.212728	9.889487	10.110513	10.102214	9.897786	45	51
10	30	9.787313	10.212687	9.889552	10.110448	10.102239	9.897761	30	50
11	45	9.787354	10.212646	9.889617	10.110383	10.102263	9.897737	15	49
12	48	9.787395	10.212605	9.889682	10.110318	10.102288	9.897712	12	48
13	15	9.787436	10.212565	9.889747	10.110253	10.102312	9.897688	45	47
14	30	9.787476	10.212524	9.889813	10.110187	10.102337	9.897663	30	46
15	45	9.787517	10.212483	9.889878	10.110122	10.102361	9.897639	15	45
16	49	9.787557	10.212443	9.889943	10.110057	10.102386	9.897614	11	44
17	15	9.787598	10.212402	9.890008	10.109992	10.102410	9.897590	45	43
18	30	9.787639	10.212361	9.890074	10.109926	10.102435	9.897565	30	42
19	45	9.787679	10.212321	9.890139	10.109861	10.102459	9.897541	15	41
20	50	9.787720	10.212280	9.890204	10.109796	10.102484	9.897516	10	40
21	15	9.787761	10.212239	9.890269	10.109731	10.102508	9.897492	45	39
22	30	9.787801	10.212199	9.890334	10.109666	10.102533	9.897467	30	38
23	45	9.787842	10.212158	9.890399	10.109601	10.102557	9.897443	15	37
24	51	9.787883	10.212117	9.890465	10.109535	10.102582	9.897418	9	36
25	15	9.787923	10.212077	9.890530	10.109470	10.102607	9.897393	11	35
26	30	9.787964	10.212036	9.890595	10.109405	10.102631	9.897369	30	34
27	45	9.788005	10.211995	9.890660	10.109340	10.102656	9.897344	15	33
28	52	9.788045	10.211955	9.890725	10.109275	10.102680	9.897320	8	32
29	15	9.788086	10.211914	9.890791	10.109209	10.102705	9.897295	45	31
30	30	9.788126	10.211874	9.890856	10.109144	10.102729	9.897271	30	30
31	45	9.788167	10.211833	9.890921	10.109079	10.102754	9.897246	11	29
32	53	9.788208	10.211792	9.890986	10.109014	10.102778	9.897222	7	28
33	15	9.788248	10.211752	9.891051	10.108949	10.102803	9.897197	45	27
34	30	9.788289	10.211711	9.891116	10.108884	10.102828	9.897172	30	26
35	45	9.788329	10.211671	9.891182	10.108818	10.102852	9.897148	15	25
36	54	9.788370	10.211630	9.891247	10.108753	10.102877	9.897123	6	24
37	15	9.788411	10.211589	9.891312	10.108688	10.102901	9.897099	45	23
38	30	9.788451	10.211549	9.891377	10.108623	10.102926	9.897074	11	22
39	45	9.788492	10.211508	9.891442	10.108558	10.102951	9.897049	15	21
40	55	9.788532	10.211468	9.891507	10.108493	10.102975	9.897025	5	20
41	15	9.788573	10.211427	9.891572	10.108428	10.103000	9.897000	45	19
42	30	9.788613	10.211387	9.891638	10.108362	10.103024	9.896976	30	18
43	45	9.788654	10.211346	9.891703	10.108297	10.103049	9.896951	15	17
44	56	9.788694	10.211306	9.891768	10.108232	10.103074	9.896926	4	16
45	15	9.788735	10.211265	9.891833	10.108167	10.103098	9.896902	45	15
46	30	9.788775	10.211225	9.891898	10.108102	10.103123	9.896877	30	14
47	45	9.788816	10.211184	9.891963	10.108037	10.103147	9.896853	11	13
48	57	9.788856	10.211144	9.892028	10.107972	10.103172	9.896828	3	12
49	15	9.788897	10.211103	9.892094	10.107906	10.103197	9.896803	45	11
50	30	9.788937	10.211063	9.892159	10.107841	10.103221	9.896779	30	10
51	45	9.788978	10.211022	9.892224	10.107776	10.103246	9.896754	15	9
52	58	9.789018	10.210982	9.892289	10.107711	10.103271	9.896729	2	8
53	15	9.789059	10.210941	9.892354	10.107646	10.103295	9.896705	11	7
54	30	9.789099	10.210901	9.892419	10.107581	10.103320	9.896680	11	6
55	45	9.789140	10.210860	9.892484	10.107516	10.103345	9.896655	15	5
56	59	9.789180	10.210820	9.892549	10.107451	10.103369	9.896631	1	4
57	15	9.789221	10.210779	9.892614	10.107386	10.103394	9.896606	45	3
58	30	9.789261	10.210739	9.892680	10.107320	10.103419	9.896581	30	2
59	45	9.789302	10.210698	9.892745	10.107255	10.103443	9.896557	11	1
60	60	9.789342	10.210658	9.892810	10.107190	10.103468	9.896532	0	0
arc	"	sine.	coscant.	tangent.	cotangent.	secant.	cosec.	arc	"
2° 28'		LOG. SINES, &c. (L.)						52 deg.	

32°		LOG. SINES, &c. (t.)						38 deg.	
sec.	'	sine.	coscant.	tangent	cotangent	secant	cosec.	'	arc.
0	0	9.788342	10.210658	9.892810	10.107190	10.103468	9.896532	60	60
1	15	9.789382	10.210618	9.892875	10.107125	10.103493	9.896507	45	59
2	30	9.789423	10.210577	9.892940	10.107060	10.103517	9.896483	30	58
3	45	9.789463	10.210537	9.893005	10.106995	10.103542	9.896458	15	57
4	1	9.789504	10.210496	9.893070	10.106930	10.103567	9.896433	59	56
5	15	9.789544	10.210456	9.893135	10.106865	10.103591	9.896409	45	55
6	30	9.789584	10.210416	9.893200	10.106800	10.103616	9.896384	30	54
7	45	9.789625	10.210375	9.893265	10.106735	10.103641	9.896359	15	53
8	2	9.789665	10.210335	9.893331	10.106669	10.103665	9.896335	58	52
9	15	9.789706	10.210294	9.893396	10.106604	10.103690	9.896310	45	51
10	30	9.789746	10.210254	9.893461	10.106539	10.103715	9.896285	30	50
11	45	9.789786	10.210214	9.893526	10.106474	10.103740	9.896260	15	49
12	3	9.789827	10.210173	9.893591	10.106409	10.103764	9.896236	57	48
13	15	9.789867	10.210133	9.893656	10.106344	10.103789	9.896211	45	47
14	30	9.789907	10.210093	9.893721	10.106279	10.103814	9.896186	30	46
15	45	9.789948	10.210052	9.893786	10.106214	10.103838	9.896162	15	45
16	4	9.789988	10.210012	9.893851	10.106149	10.103863	9.896137	56	44
17	15	9.790028	10.209972	9.893916	10.106084	10.103888	9.896112	45	43
18	30	9.790069	10.209931	9.893981	10.106019	10.103913	9.896087	30	42
19	45	9.790109	10.209891	9.894046	10.105954	10.103937	9.896062	15	41
20	5	9.790149	10.209851	9.894111	10.105889	10.103962	9.896038	55	40
21	15	9.790190	10.209810	9.894176	10.105824	10.103987	9.896013	45	39
22	30	9.790230	10.209770	9.894241	10.105759	10.104012	9.895988	30	38
23	45	9.790270	10.209730	9.894306	10.105694	10.104036	9.895964	15	37
24	6	9.790310	10.209690	9.894371	10.105629	10.104061	9.895939	54	36
25	15	9.790351	10.209649	9.894437	10.105563	10.104086	9.895914	45	35
26	30	9.790391	10.209609	9.894502	10.105498	10.104111	9.895889	30	34
27	45	9.790431	10.209569	9.894567	10.105433	10.104135	9.895865	15	33
28	7	9.790471	10.209529	9.894632	10.105368	10.104160	9.895840	53	32
29	15	9.790512	10.209488	9.894697	10.105303	10.104185	9.895815	45	31
30	30	9.790552	10.209448	9.894762	10.105238	10.104210	9.895790	30	30
31	45	9.790592	10.209408	9.894827	10.105173	10.104235	9.895765	15	29
32	8	9.790632	10.209368	9.894892	10.105108	10.104259	9.895741	52	28
33	15	9.790673	10.209327	9.894957	10.105043	10.104284	9.895716	45	27
34	30	9.790713	10.209287	9.895022	10.104978	10.104309	9.895691	30	26
35	45	9.790753	10.209247	9.895087	10.104913	10.104334	9.895666	15	25
36	9	9.790793	10.209207	9.895152	10.104848	10.104359	9.895641	51	24
37	15	9.790833	10.209167	9.895217	10.104783	10.104383	9.895617	45	23
38	30	9.790874	10.209126	9.895282	10.104718	10.104408	9.895592	30	22
39	45	9.790914	10.209086	9.895347	10.104653	10.104433	9.895567	15	21
40	10	9.790954	10.209046	9.895412	10.104588	10.104458	9.895542	50	20
41	15	9.790994	10.209006	9.895477	10.104523	10.104483	9.895517	45	19
42	30	9.791034	10.208966	9.895542	10.104458	10.104508	9.895492	30	18
43	45	9.791075	10.208925	9.895607	10.104393	10.104532	9.895468	15	17
44	11	9.791115	10.208885	9.895672	10.104328	10.104557	9.895443	49	16
45	15	9.791155	10.208845	9.895737	10.104263	10.104582	9.895418	45	15
46	30	9.791195	10.208805	9.895802	10.104198	10.104607	9.895393	30	14
47	45	9.791235	10.208765	9.895867	10.104133	10.104632	9.895368	15	13
48	12	9.791275	10.208725	9.895932	10.104068	10.104657	9.895343	48	12
49	15	9.791315	10.208685	9.895997	10.104003	10.104681	9.895319	45	11
50	30	9.791355	10.208644	9.896062	10.103938	10.104706	9.895294	30	10
51	45	9.791396	10.208604	9.896127	10.103873	10.104731	9.895269	15	9
52	13	9.791436	10.208564	9.896192	10.103808	10.104756	9.895244	47	8
53	15	9.791476	10.208524	9.896257	10.103743	10.104781	9.895219	45	7
54	30	9.791516	10.208484	9.896322	10.103678	10.104806	9.895194	30	6
55	45	9.791556	10.208444	9.896387	10.103613	10.104831	9.895169	15	5
56	14	9.791596	10.208404	9.896452	10.103548	10.104856	9.895144	46	4
57	15	9.791636	10.208364	9.896517	10.103483	10.104880	9.895120	45	3
58	30	9.791676	10.208324	9.896582	10.103418	10.104905	9.895095	30	2
59	45	9.791716	10.208284	9.896647	10.103353	10.104930	9.895070	15	1
60	15	9.791757	10.208243	9.896712	10.103288	10.104955	9.895045	45	0
sec.	'	cosine.	secant.	cotangent.	tangent.	coscant.	sine.	'	arc.
27°		LOG. SINES, &c.						51 deg.	

2° 33'.		LOG. SINES, &c. (L.)						31 deg.	
sec.	min.	sin.	cos.	tan.	cot.	sec.	csc.	sec.	min.
0	15	9.791757	10.246343	9.896712	10.103288	10.104955	9.895045	45	60
1	15	9.791707	10.246203	9.896777	10.103223	10.104980	9.895020	40	59
2	30	9.791837	10.246163	9.896841	10.103159	10.105005	9.894995	30	58
3	45	9.791877	10.246123	9.896906	10.103094	10.105030	9.894970	15	57
4	16	9.791917	10.246083	9.896971	10.103029	10.105055	9.894945	41	56
5	15	9.791957	10.246043	9.897036	10.102964	10.105080	9.894920	45	55
6	30	9.791997	10.246003	9.897101	10.102899	10.105105	9.894895	30	54
7	45	9.792037	10.245963	9.897166	10.102834	10.105129	9.894871	15	53
8	17	9.792077	10.245923	9.897231	10.102769	10.105154	9.894846	43	52
9	15	9.792117	10.245883	9.897296	10.102704	10.105179	9.894821	45	51
10	30	9.792157	10.245843	9.897361	10.102639	10.105204	9.894796	30	50
11	45	9.792197	10.245803	9.897426	10.102574	10.105229	9.894771	15	49
12	18	9.792237	10.245763	9.897491	10.102509	10.105254	9.894746	42	48
13	15	9.792277	10.245723	9.897556	10.102444	10.105279	9.894721	45	47
14	30	9.792317	10.245683	9.897621	10.102379	10.105304	9.894696	30	46
15	45	9.792357	10.245643	9.897686	10.102314	10.105329	9.894671	15	45
16	19	9.792397	10.245603	9.897751	10.102249	10.105354	9.894646	41	44
17	15	9.792437	10.245563	9.897816	10.102184	10.105379	9.894621	45	43
18	30	9.792477	10.245523	9.897881	10.102119	10.105404	9.894596	30	42
19	45	9.792517	10.245483	9.897946	10.102054	10.105429	9.894571	15	41
20	20	9.792557	10.245443	9.898011	10.101989	10.105454	9.894546	40	40
21	15	9.792597	10.245403	9.898076	10.101924	10.105479	9.894521	45	39
22	30	9.792637	10.245363	9.898141	10.101859	10.105504	9.894496	30	38
23	45	9.792677	10.245323	9.898206	10.101794	10.105529	9.894471	15	37
24	21	9.792717	10.245283	9.898271	10.101729	10.105554	9.894446	41	36
25	15	9.792757	10.245243	9.898336	10.101664	10.105579	9.894421	45	35
26	30	9.792797	10.245203	9.898401	10.101599	10.105604	9.894396	30	34
27	45	9.792837	10.245163	9.898466	10.101534	10.105629	9.894371	15	33
28	22	9.792877	10.245123	9.898531	10.101469	10.105654	9.894346	38	32
29	15	9.792917	10.245083	9.898596	10.101404	10.105679	9.894321	45	31
30	30	9.792957	10.245043	9.898661	10.101339	10.105704	9.894296	30	30
31	45	9.792997	10.245003	9.898726	10.101274	10.105729	9.894271	15	29
32	23	9.793037	10.244963	9.898791	10.101209	10.105754	9.894246	37	28
33	15	9.793077	10.244923	9.898856	10.101144	10.105779	9.894221	45	27
34	30	9.793117	10.244883	9.898921	10.101079	10.105804	9.894196	30	26
35	45	9.793157	10.244843	9.898986	10.101014	10.105829	9.894171	15	25
36	24	9.793197	10.244803	9.899051	10.100949	10.105854	9.894146	36	24
37	15	9.793237	10.244763	9.899116	10.100884	10.105879	9.894121	45	23
38	30	9.793277	10.244723	9.899181	10.100819	10.105904	9.894096	30	22
39	45	9.793317	10.244683	9.899246	10.100754	10.105929	9.894071	15	21
40	25	9.793357	10.244643	9.899311	10.100689	10.105954	9.894046	35	20
41	15	9.793397	10.244603	9.899376	10.100624	10.105979	9.894021	45	19
42	30	9.793437	10.244563	9.899441	10.100559	10.106004	9.893996	30	18
43	45	9.793477	10.244523	9.899506	10.100494	10.106029	9.893971	15	17
44	26	9.793517	10.244483	9.899571	10.100429	10.106054	9.893946	34	16
45	15	9.793557	10.244443	9.899636	10.100364	10.106079	9.893921	45	15
46	30	9.793597	10.244403	9.899701	10.100299	10.106104	9.893896	30	14
47	45	9.793637	10.244363	9.899766	10.100234	10.106129	9.893871	15	13
48	27	9.793677	10.244323	9.899831	10.100169	10.106154	9.893846	33	12
49	15	9.793717	10.244283	9.899896	10.100104	10.106179	9.893821	45	11
50	30	9.793757	10.244243	9.899961	10.100039	10.106204	9.893796	30	10
51	45	9.793797	10.244203	9.900026	10.099974	10.106229	9.893771	15	9
52	28	9.793837	10.244163	9.900091	10.099909	10.106254	9.893746	32	8
53	15	9.793877	10.244123	9.900156	10.099844	10.106279	9.893721	45	7
54	30	9.793917	10.244083	9.900221	10.099779	10.106304	9.893696	30	6
55	45	9.793957	10.244043	9.900286	10.099714	10.106329	9.893671	15	5
56	29	9.793997	10.244003	9.900351	10.099649	10.106354	9.893646	31	4
57	15	9.794037	10.243963	9.900416	10.099584	10.106379	9.893621	45	3
58	30	9.794077	10.243923	9.900481	10.099519	10.106404	9.893596	30	2
59	45	9.794117	10.243883	9.900546	10.099454	10.106429	9.893571	15	1
60	30	9.794157	10.243843	9.900611	10.099389	10.106454	9.893546	30	0
sec.	min.	sin.	cos.	tan.	cot.	sec.	csc.	sec.	min.
2° 36'.		LOG. SINES, &c.						31 deg.	

24°.		LOG. SINES, &c. (t.)						88 deg.	
min.	sec.	sin.	cos.	tan.	cot.	sec.	csc.	min.	sec.
0	30	9.794130	10.105870	9.900605	10.099395	10.106456	9.893544	30	60
1	15	9.794189	10.205811	9.900670	10.099330	10.106481	9.893519	45	59
2	30	9.794229	10.205771	9.900735	10.099265	10.106506	9.893494	30	58
3	45	9.794269	10.205731	9.900800	10.099200	10.106531	9.893469	15	57
4	31	9.794308	10.205692	9.900864	10.099136	10.106556	9.893444	29	56
5	15	9.794348	10.205652	9.900929	10.099071	10.106581	9.893419	45	55
6	30	9.794388	10.205612	9.900994	10.099006	10.106606	9.893394	30	54
7	45	9.794427	10.205573	9.901059	10.098941	10.106632	9.893368	15	53
8	32	9.794467	10.205533	9.901124	10.098876	10.106657	9.893343	28	52
9	15	9.794507	10.205493	9.901189	10.098811	10.106682	9.893318	45	51
10	30	9.794546	10.205454	9.901253	10.098747	10.106707	9.893293	30	50
11	45	9.794586	10.205414	9.901318	10.098682	10.106732	9.893268	15	49
12	33	9.794626	10.205374	9.901383	10.098617	10.106757	9.893243	27	48
13	15	9.794665	10.205335	9.901448	10.098552	10.106783	9.893217	45	47
14	30	9.794705	10.205296	9.901513	10.098487	10.106808	9.893192	30	46
15	45	9.794744	10.205256	9.901577	10.098423	10.106833	9.893167	15	45
16	34	9.794784	10.205216	9.901642	10.098358	10.106858	9.893142	26	44
17	15	9.794824	10.205176	9.901707	10.098293	10.106883	9.893117	45	43
18	30	9.794863	10.205137	9.901772	10.098228	10.106908	9.893092	30	42
19	45	9.794903	10.205097	9.901836	10.098164	10.106934	9.893066	15	41
20	35	9.794942	10.205058	9.901901	10.098099	10.106959	9.893041	25	40
21	15	9.794982	10.205018	9.901966	10.098034	10.106984	9.893016	45	39
22	30	9.795022	10.204978	9.902031	10.097969	10.107009	9.892991	30	38
23	45	9.795061	10.204939	9.902096	10.097904	10.107034	9.892966	15	37
24	36	9.795101	10.204899	9.902160	10.097840	10.107060	9.892940	24	36
25	15	9.795140	10.204860	9.902225	10.097775	10.107085	9.892915	45	35
26	30	9.795180	10.204820	9.902290	10.097710	10.107110	9.892890	30	34
27	45	9.795219	10.204781	9.902355	10.097645	10.107135	9.892865	15	33
28	37	9.795259	10.204741	9.902419	10.097581	10.107161	9.892839	23	32
29	15	9.795298	10.204702	9.902484	10.097516	10.107186	9.892814	45	31
30	30	9.795338	10.204662	9.902549	10.097451	10.107211	9.892789	30	30
31	45	9.795378	10.204622	9.902614	10.097386	10.107236	9.892764	15	29
32	38	9.795417	10.204583	9.902679	10.097321	10.107262	9.892738	22	28
33	15	9.795457	10.204543	9.902743	10.097257	10.107287	9.892713	45	27
34	30	9.795496	10.204504	9.902808	10.097192	10.107312	9.892688	30	26
35	45	9.795536	10.204464	9.902873	10.097127	10.107337	9.892663	15	25
36	39	9.795575	10.204425	9.902938	10.097062	10.107363	9.892637	21	24
37	15	9.795615	10.204385	9.903002	10.096998	10.107388	9.892612	45	23
38	30	9.795654	10.204346	9.903067	10.096933	10.107413	9.892587	30	22
39	45	9.795694	10.204306	9.903132	10.096868	10.107438	9.892562	15	21
40	40	9.795733	10.204267	9.903197	10.096803	10.107464	9.892536	20	20
41	15	9.795772	10.204228	9.903261	10.096739	10.107489	9.892511	45	19
42	30	9.795812	10.204188	9.903326	10.096674	10.107514	9.892486	30	18
43	45	9.795851	10.204149	9.903391	10.096609	10.107539	9.892461	15	17
44	41	9.795891	10.204109	9.903455	10.096545	10.107565	9.892435	19	16
45	15	9.795930	10.204070	9.903520	10.096480	10.107590	9.892410	45	15
46	30	9.795970	10.204030	9.903585	10.096415	10.107615	9.892385	30	14
47	45	9.796009	10.203991	9.903650	10.096350	10.107641	9.892359	15	13
48	42	9.796049	10.203951	9.903714	10.096286	10.107666	9.892334	18	12
49	15	9.796088	10.203912	9.903779	10.096221	10.107691	9.892309	45	11
50	30	9.796127	10.203873	9.903844	10.096156	10.107716	9.892284	30	10
51	45	9.796167	10.203833	9.903909	10.096091	10.107742	9.892258	15	9
52	43	9.796206	10.203794	9.903973	10.096027	10.107767	9.892233	17	8
53	15	9.796246	10.203754	9.904038	10.095962	10.107792	9.892208	45	7
54	30	9.796285	10.203715	9.904103	10.095897	10.107818	9.892182	30	6
55	45	9.796324	10.203676	9.904167	10.095833	10.107843	9.892157	15	5
56	41	9.796364	10.203636	9.904232	10.095768	10.107868	9.892132	16	4
57	15	9.796403	10.203597	9.904297	10.095703	10.107894	9.892106	45	3
58	30	9.796442	10.203557	9.904362	10.095638	10.107919	9.892081	30	2
59	45	9.796482	10.203517	9.904426	10.095574	10.107944	9.892056	15	1
60	45	9.796521	10.203479	9.904491	10.095509	10.107970	9.892030	15	0
min.	sec.	sin.	cos.	tan.	cot.	sec.	csc.	min.	sec.
25°.		LOG. SINES, &c.						51 deg.	

2 ^h 35 ^m .		LOG. SINES, &c. (t.)						38 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	'
0	45	9.796521	10.203479	9.904491	10.095509	10.107970	9.892030		15
1	15	9.796561	10.203439	9.904556	10.095444	10.107995	9.892005	45	
2	30	9.796600	10.203400	9.904620	10.095380	10.108020	9.891980	30	
3	45	9.796639	10.203361	9.904685	10.095315	10.108046	9.891954	15	
4	46	9.796679	10.203321	9.904750	10.095250	10.108071	9.891929		14
5	15	9.796718	10.203282	9.904814	10.095186	10.108097	9.891903	45	
6	30	9.796757	10.203243	9.904879	10.095121	10.108122	9.891878	30	
7	45	9.796797	10.203203	9.904944	10.095056	10.108147	9.891853	15	
8	47	9.796886	10.203164	9.905008	10.094992	10.108173	9.891827		13
9	15	9.796875	10.203125	9.905073	10.094927	10.108198	9.891802	45	
10	30	9.796914	10.203086	9.905138	10.094862	10.108223	9.891777	30	
11	45	9.796954	10.203046	9.905202	10.094798	10.108249	9.891751	15	
12	48	9.796993	10.203007	9.905267	10.094733	10.108274	9.891726		12
13	15	9.797032	10.202968	9.905332	10.094668	10.108300	9.891700	45	
14	30	9.797072	10.202928	9.905396	10.094604	10.108325	9.891675	30	
15	45	9.797111	10.202889	9.905461	10.094539	10.108350	9.891650	15	
16	49	9.797150	10.202850	9.905526	10.094474	10.108376	9.891624		11
17	15	9.797189	10.202811	9.905590	10.094410	10.108401	9.891599	45	
18	30	9.797229	10.202771	9.905655	10.094345	10.108427	9.891573	30	
19	45	9.797268	10.202732	9.905720	10.094280	10.108452	9.891548	15	
20	50	9.797307	10.202693	9.905784	10.094216	10.108477	9.891523		10
21	15	9.797346	10.202654	9.905849	10.094151	10.108503	9.891497	45	
22	30	9.797386	10.202614	9.905914	10.094086	10.108528	9.891472	30	
23	45	9.797425	10.202575	9.905978	10.094022	10.108554	9.891446	15	
24	51	9.797464	10.202536	9.906043	10.093957	10.108579	9.891421		9
25	15	9.797503	10.202497	9.906108	10.093892	10.108605	9.891395	45	
26	30	9.797542	10.202458	9.906172	10.093828	10.108630	9.891370	30	
27	45	9.797582	10.202418	9.906237	10.093763	10.108656	9.891344	15	
28	52	9.797621	10.202379	9.906302	10.093698	10.108681	9.891319		8
29	15	9.797660	10.202340	9.906366	10.093634	10.108706	9.891294	45	
30	30	9.797699	10.202301	9.906431	10.093569	10.108732	9.891268	30	
31	45	9.797738	10.202262	9.906496	10.093504	10.108757	9.891243	15	
32	53	9.797777	10.202223	9.906560	10.093440	10.108783	9.891217		7
33	15	9.797817	10.202183	9.906625	10.093375	10.108808	9.891192	45	
34	30	9.797856	10.202144	9.906689	10.093311	10.108834	9.891166	30	
35	45	9.797895	10.202105	9.906754	10.093246	10.108859	9.891141	15	
36	54	9.797934	10.202066	9.906819	10.093181	10.108885	9.891115		6
37	15	9.797973	10.202027	9.906883	10.093117	10.108910	9.891090	45	
38	30	9.798012	10.201988	9.906948	10.093052	10.108936	9.891064	30	
39	45	9.798051	10.201949	9.907013	10.092987	10.108961	9.891039	15	
40	55	9.798091	10.201909	9.907077	10.092923	10.108987	9.891013		5
41	15	9.798130	10.201870	9.907142	10.092858	10.109012	9.890988	45	
42	30	9.798169	10.201831	9.907206	10.092794	10.109038	9.890962	30	
43	45	9.798208	10.201792	9.907271	10.092729	10.109063	9.890937	15	
44	56	9.798247	10.201753	9.907336	10.092664	10.109089	9.890911		4
45	15	9.798286	10.201714	9.907400	10.092600	10.109114	9.890886	45	
46	30	9.798325	10.201675	9.907465	10.092535	10.109140	9.890860	30	
47	45	9.798364	10.201636	9.907529	10.092471	10.109165	9.890835	15	
48	57	9.798403	10.201597	9.907594	10.092406	10.109191	9.890809		3
49	15	9.798442	10.201558	9.907659	10.092341	10.109216	9.890784	45	
50	30	9.798481	10.201519	9.907723	10.092277	10.109242	9.890758	30	
51	45	9.798521	10.201479	9.907788	10.092212	10.109267	9.890733	15	
52	58	9.798560	10.201440	9.907852	10.092148	10.109293	9.890707		2
53	15	9.798599	10.201401	9.907917	10.092083	10.109319	9.890681	45	
54	30	9.798638	10.201362	9.907982	10.092018	10.109344	9.890656	30	
55	45	9.798677	10.201323	9.908046	10.091954	10.109370	9.890630	15	
56	59	9.798716	10.201284	9.908111	10.091889	10.109395	9.890605		1
57	15	9.798755	10.201245	9.908175	10.091825	10.109421	9.890579	45	
58	30	9.798794	10.201206	9.908240	10.091760	10.109446	9.890554	30	
59	45	9.798833	10.201167	9.908305	10.091695	10.109472	9.890528	15	
60	60	9.798872	10.201128	9.908369	10.091631	10.109497	9.890503		0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	'
3 ^h 24 ^m .		LOG. SINES, &c.						51 deg.	

2° 36'.		LOG. SINES, &c. (t.)						39 deg.	
arc.	'	sine.	coscant.	tangent.	colangent.	secant.	comine.	'	sec.
0	0	9.798872	10.101128	9.908369	10.091631	10.109497	9.890503	60	60
1	15	9.798911	10.101089	9.908411	10.091589	10.109523	9.890477	45	59
2	30	9.798950	10.101050	9.908450	10.091550	10.109549	9.890451	30	58
3	45	9.798989	10.101011	9.908489	10.091511	10.109574	9.890426	15	57
4	1	9.799028	10.100972	9.908527	10.091473	10.109600	9.890400	59	56
5	15	9.799067	10.100933	9.908569	10.091431	10.109625	9.890375	45	55
6	30	9.799106	10.100894	9.908607	10.091389	10.109651	9.890349	30	54
7	45	9.799145	10.100855	9.908645	10.091347	10.109677	9.890323	15	53
8	2	9.799184	10.100816	9.908683	10.091305	10.109702	9.890298	58	52
9	15	9.799223	10.100777	9.908725	10.091263	10.109728	9.890272	45	51
10	30	9.799261	10.100739	9.908763	10.091221	10.109753	9.890247	30	50
11	45	9.799300	10.100700	9.908801	10.091179	10.109779	9.890221	15	49
12	3	9.799339	10.100661	9.908839	10.091137	10.109805	9.890196	57	48
13	15	9.799378	10.100622	9.908878	10.091095	10.109830	9.890170	45	47
14	30	9.799417	10.100583	9.908916	10.091053	10.109856	9.890144	30	46
15	45	9.799456	10.100544	9.908954	10.091011	10.109882	9.890118	15	45
16	4	9.799495	10.100505	9.908992	10.090969	10.109907	9.890093	56	44
17	15	9.799534	10.100466	9.909030	10.090927	10.109933	9.890067	45	43
18	30	9.799573	10.100427	9.909068	10.090885	10.109958	9.890042	30	42
19	45	9.799612	10.100388	9.909106	10.090843	10.109984	9.890016	15	41
20	5	9.799651	10.100349	9.909144	10.090801	10.110010	9.889990	55	40
21	15	9.799690	10.100310	9.909182	10.090759	10.110035	9.889965	45	39
22	30	9.799728	10.100272	9.909220	10.090717	10.110061	9.889939	30	38
23	45	9.799767	10.100233	9.909258	10.090675	10.110087	9.889913	15	37
24	6	9.799806	10.100194	9.909296	10.090633	10.110112	9.889888	54	36
25	15	9.799845	10.100155	9.909334	10.090591	10.110138	9.889862	45	35
26	30	9.799884	10.100116	9.909372	10.090549	10.110164	9.889836	30	34
27	45	9.799923	10.100077	9.909410	10.090507	10.110189	9.889811	15	33
28	7	9.799962	10.100038	9.909448	10.090465	10.110215	9.889785	53	32
29	15	9.800000	10.100000	9.909486	10.090423	10.110241	9.889759	45	31
30	30	9.800039	10.100061	9.909524	10.090381	10.110266	9.889734	30	30
31	45	9.800077	10.100022	9.909562	10.090339	10.110292	9.889708	15	29
32	8	9.800117	10.100083	9.909600	10.090297	10.110318	9.889682	52	28
33	15	9.800156	10.100044	9.909638	10.090255	10.110344	9.889656	45	27
34	30	9.800194	10.100005	9.909676	10.090213	10.110369	9.889631	30	26
35	45	9.800233	10.100066	9.909714	10.090171	10.110395	9.889605	15	25
36	9	9.800272	10.100027	9.909752	10.090129	10.110421	9.889579	51	24
37	15	9.800311	10.100088	9.909790	10.090087	10.110446	9.889554	45	23
38	30	9.800350	10.100049	9.909828	10.090045	10.110472	9.889528	30	22
39	45	9.800388	10.100010	9.909866	10.090003	10.110498	9.889502	15	21
40	10	9.800427	10.100071	9.909904	10.089961	10.110524	9.889476	50	20
41	15	9.800466	10.100032	9.909942	10.089919	10.110549	9.889451	45	19
42	30	9.800505	10.100093	9.909980	10.089877	10.110575	9.889425	30	18
43	45	9.800544	10.100054	9.910018	10.089835	10.110601	9.889399	15	17
44	11	9.800583	10.100015	9.910056	10.089793	10.110626	9.889374	49	16
45	15	9.800621	10.100076	9.910094	10.089751	10.110652	9.889348	45	15
46	30	9.800660	10.100037	9.910132	10.089709	10.110678	9.889322	30	14
47	45	9.800698	10.100098	9.910170	10.089667	10.110704	9.889296	15	13
48	12	9.800737	10.100059	9.910208	10.089625	10.110729	9.889271	48	12
49	15	9.800776	10.100020	9.910246	10.089583	10.110755	9.889245	45	11
50	30	9.800815	10.100081	9.910284	10.089541	10.110781	9.889219	30	10
51	45	9.800854	10.100042	9.910322	10.089499	10.110807	9.889193	15	9
52	13	9.800893	10.100003	9.910360	10.089457	10.110833	9.889167	47	8
53	15	9.800931	10.100064	9.910398	10.089415	10.110858	9.889142	45	7
54	30	9.800970	10.100025	9.910436	10.089373	10.110884	9.889116	30	6
55	45	9.801008	10.100086	9.910474	10.089331	10.110910	9.889090	15	5
56	14	9.801047	10.100047	9.910512	10.089289	10.110936	9.889064	46	4
57	15	9.801085	10.100008	9.910550	10.089247	10.110961	9.889039	45	3
58	30	9.801124	10.100069	9.910588	10.089205	10.110987	9.889013	30	2
59	45	9.801163	10.100030	9.910626	10.089163	10.111013	9.888987	15	1
60	15	9.801201	10.100091	9.910664	10.089121	10.111039	9.888961	45	0
sec.		comine.	secant.	colangent.	tangent.	coscant.	sine.	'	sec.
2° 36'.		LOG. SINES, &c.						50 deg.	

2° 37'		LOG. SINES, &c. (t)				39 deg.	
deg.	'	sine	cosecant	tangent	cotangent	secant	cosine
0	15	9.801201	10.198799	9.912240	10.087760	10.111039	9.888961
1	15	9.801240	10.198760	9.912305	10.087695	10.111065	9.888935
2	30	9.801279	10.198721	9.912369	10.087631	10.111090	9.888910
3	45	9.801317	10.198683	9.912434	10.087566	10.111116	9.888884
4	16	9.801356	10.198644	9.912498	10.087502	10.111142	9.888858
5	16	9.801395	10.198605	9.912562	10.087438	10.111168	9.888832
6	30	9.801433	10.198567	9.912627	10.087373	10.111194	9.888806
7	45	9.801472	10.198528	9.912691	10.087309	10.111220	9.888780
8	17	9.801511	10.198490	9.912756	10.087244	10.111245	9.888755
9	18	9.801549	10.198451	9.912820	10.087180	10.111271	9.888729
10	30	9.801588	10.198412	9.912885	10.087115	10.111297	9.888703
11	45	9.801626	10.198374	9.912949	10.087051	10.111323	9.888677
12	18	9.801665	10.198335	9.913014	10.086986	10.111349	9.888651
13	18	9.801703	10.198297	9.913078	10.086922	10.111375	9.888625
14	30	9.801742	10.198258	9.913142	10.086858	10.111400	9.888600
15	45	9.801781	10.198219	9.913207	10.086793	10.111426	9.888574
16	19	9.801819	10.198181	9.913271	10.086729	10.111452	9.888548
17	18	9.801858	10.198142	9.913336	10.086664	10.111478	9.888522
18	30	9.801896	10.198104	9.913400	10.086600	10.111504	9.888496
19	45	9.801935	10.198065	9.913465	10.086535	10.111530	9.888470
20	20	9.801973	10.198027	9.913529	10.086471	10.111556	9.888444
21	18	9.802012	10.197988	9.913593	10.086407	10.111582	9.888418
22	30	9.802050	10.197950	9.913658	10.086342	10.111607	9.888393
23	45	9.802089	10.197911	9.913722	10.086278	10.111633	9.888367
24	21	9.802128	10.197872	9.913787	10.086213	10.111659	9.888341
25	18	9.802166	10.197834	9.913851	10.086149	10.111685	9.888315
26	30	9.802205	10.197795	9.913916	10.086084	10.111711	9.888289
27	45	9.802243	10.197757	9.913980	10.086020	10.111737	9.888263
28	22	9.802282	10.197718	9.914044	10.085956	10.111763	9.888237
29	18	9.802320	10.197680	9.914109	10.085891	10.111789	9.888211
30	30	9.802359	10.197641	9.914173	10.085827	10.111815	9.888185
31	45	9.802397	10.197603	9.914238	10.085762	10.111841	9.888159
32	23	9.802435	10.197565	9.914302	10.085698	10.111867	9.888133
33	18	9.802474	10.197526	9.914366	10.085634	10.111892	9.888108
34	30	9.802512	10.197488	9.914431	10.085569	10.111918	9.888082
35	45	9.802551	10.197449	9.914495	10.085505	10.111944	9.888056
36	24	9.802589	10.197411	9.914560	10.085440	10.111970	9.888030
37	18	9.802628	10.197372	9.914624	10.085376	10.111996	9.888004
38	30	9.802666	10.197334	9.914688	10.085312	10.112022	9.887978
39	45	9.802705	10.197295	9.914753	10.085247	10.112048	9.887952
40	25	9.802743	10.197257	9.914817	10.085183	10.112074	9.887926
41	18	9.802782	10.197218	9.914881	10.085119	10.112100	9.887900
42	30	9.802820	10.197180	9.914946	10.085054	10.112126	9.887874
43	45	9.802858	10.197142	9.915010	10.084990	10.112152	9.887848
44	26	9.802897	10.197103	9.915075	10.084925	10.112178	9.887822
45	18	9.802935	10.197065	9.915139	10.084861	10.112204	9.887796
46	30	9.802974	10.197026	9.915203	10.084797	10.112230	9.887770
47	45	9.803012	10.196988	9.915268	10.084732	10.112256	9.887744
48	27	9.803050	10.196950	9.915332	10.084668	10.112282	9.887718
49	18	9.803089	10.196911	9.915396	10.084604	10.112308	9.887692
50	30	9.803127	10.196873	9.915461	10.084539	10.112334	9.887666
51	45	9.803165	10.196835	9.915525	10.084475	10.112360	9.887640
52	28	9.803204	10.196796	9.915590	10.084410	10.112386	9.887614
53	18	9.803242	10.196758	9.915654	10.084346	10.112412	9.887588
54	30	9.803280	10.196720	9.915718	10.084282	10.112438	9.887562
55	45	9.803319	10.196681	9.915783	10.084217	10.112464	9.887536
56	29	9.803357	10.196643	9.915847	10.084153	10.112490	9.887510
57	18	9.803396	10.196604	9.915911	10.084089	10.112516	9.887484
58	30	9.803434	10.196566	9.915976	10.084024	10.112542	9.887458
59	45	9.803472	10.196528	9.916040	10.083960	10.112568	9.887432
60	30	9.803511	10.196490	9.916104	10.083896	10.112594	9.887406
deg.	'	sine	cosecant	tangent	cotangent	secant	cosine
2° 22'		LOG. SINES, &c.				50 deg.	

2° 39'		LOG. SINES, &c. (L)						39 deg.	
sec.	"	sin.	coscant.	tangent.	cotangent.	secant.	cosec.	"	sec.
0	30	9.886510	10.196400	9.916104	10.083896	10.112594	9.887496	30	60
1	18	9.883549	10.196451	9.916169	10.083831	10.112620	9.887380	45	59
2	30	9.883587	10.196413	9.916233	10.083767	10.112646	9.887354	30	58
3	45	9.883625	10.196375	9.916297	10.083703	10.112672	9.887328	15	57
4	31	9.883664	10.196336	9.916362	10.083638	10.112698	9.887302	29	56
5	15	9.883702	10.196298	9.916426	10.083574	10.112724	9.887276	45	55
6	30	9.883740	10.196260	9.916490	10.083510	10.112750	9.887250	30	54
7	45	9.883779	10.196221	9.916555	10.083445	10.112776	9.887224	15	53
8	32	9.883817	10.196183	9.916619	10.083381	10.112802	9.887198	28	52
9	15	9.883855	10.196145	9.916683	10.083317	10.112828	9.887172	45	51
10	30	9.883893	10.196107	9.916748	10.083252	10.112855	9.887145	30	50
11	45	9.883932	10.196068	9.916812	10.083188	10.112881	9.887119	15	49
12	33	9.883970	10.196030	9.916876	10.083124	10.112907	9.887093	27	48
13	15	9.884008	10.195992	9.916941	10.083059	10.112933	9.887067	45	47
14	30	9.884046	10.195954	9.917006	10.082995	10.112959	9.887041	30	46
15	45	9.884084	10.195915	9.917069	10.082931	10.112985	9.887015	15	45
16	34	9.884123	10.195877	9.917134	10.082866	10.113011	9.886989	26	44
17	15	9.884161	10.195839	9.917198	10.082802	10.113037	9.886963	45	43
18	30	9.884199	10.195801	9.917262	10.082738	10.113063	9.886937	30	42
19	45	9.884237	10.195763	9.917327	10.082673	10.113089	9.886911	15	41
20	35	9.884276	10.195724	9.917391	10.082609	10.113115	9.886885	25	40
21	15	9.884314	10.195686	9.917455	10.082545	10.113142	9.886859	45	39
22	30	9.884352	10.195648	9.917520	10.082480	10.113168	9.886833	30	38
23	45	9.884390	10.195610	9.917584	10.082416	10.113194	9.886807	15	37
24	36	9.884428	10.195572	9.917648	10.082352	10.113220	9.886781	24	36
25	15	9.884467	10.195533	9.917713	10.082287	10.113246	9.886755	45	35
26	30	9.884505	10.195495	9.917777	10.082223	10.113272	9.886729	30	34
27	45	9.884543	10.195457	9.917841	10.082159	10.113298	9.886703	15	33
28	37	9.884581	10.195419	9.917905	10.082095	10.113324	9.886677	23	32
29	15	9.884619	10.195381	9.917970	10.082030	10.113351	9.886651	45	31
30	30	9.884657	10.195343	9.918034	10.081966	10.113377	9.886625	30	30
31	45	9.884695	10.195305	9.918098	10.081902	10.113403	9.886599	15	29
32	38	9.884734	10.195266	9.918163	10.081837	10.113429	9.886573	22	28
33	15	9.884772	10.195228	9.918227	10.081773	10.113455	9.886547	45	27
34	30	9.884810	10.195190	9.918291	10.081709	10.113481	9.886521	30	26
35	45	9.884848	10.195152	9.918355	10.081645	10.113507	9.886495	15	25
36	39	9.884886	10.195114	9.918420	10.081580	10.113533	9.886469	21	24
37	15	9.884924	10.195076	9.918484	10.081516	10.113559	9.886443	45	23
38	30	9.884962	10.195038	9.918548	10.081452	10.113585	9.886417	30	22
39	45	9.885000	10.195000	9.918613	10.081387	10.113612	9.886391	15	21
40	40	9.885038	10.194962	9.918677	10.081323	10.113638	9.886365	20	20
41	15	9.885077	10.194923	9.918741	10.081259	10.113665	9.886339	45	19
42	30	9.885115	10.194885	9.918805	10.081195	10.113691	9.886313	30	18
43	45	9.885153	10.194847	9.918870	10.081130	10.113717	9.886287	15	17
44	41	9.885191	10.194809	9.918934	10.081066	10.113743	9.886261	19	16
45	15	9.885229	10.194771	9.918998	10.081002	10.113769	9.886235	45	15
46	30	9.885267	10.194733	9.919063	10.080937	10.113796	9.886209	30	14
47	45	9.885305	10.194695	9.919127	10.080873	10.113822	9.886183	15	13
48	42	9.885343	10.194657	9.919191	10.080809	10.113848	9.886157	18	12
49	15	9.885381	10.194619	9.919255	10.080745	10.113874	9.886131	45	11
50	30	9.885419	10.194581	9.919320	10.080680	10.113901	9.886105	30	10
51	45	9.885457	10.194543	9.919384	10.080616	10.113927	9.886079	15	9
52	43	9.885495	10.194505	9.919448	10.080552	10.113953	9.886053	17	8
53	15	9.885533	10.194467	9.919512	10.080488	10.113979	9.886027	45	7
54	30	9.885571	10.194429	9.919577	10.080423	10.114006	9.885999	30	6
55	45	9.885609	10.194391	9.919641	10.080359	10.114032	9.885973	15	5
56	44	9.885647	10.194353	9.919705	10.080295	10.114058	9.885947	16	4
57	15	9.885685	10.194315	9.919769	10.080231	10.114084	9.885921	45	3
58	30	9.885723	10.194277	9.919834	10.080166	10.114111	9.885895	30	2
59	45	9.885761	10.194239	9.919898	10.080102	10.114137	9.885869	15	1
60	45	9.885799	10.194201	9.919962	10.080038	10.114163	9.885843	15	0
sec.	"	cosine.	secant.	co-tangent.	tangent.	cosecant.	sine.	"	sec.
2° 21'		LOG. SINES, &c.						50 deg.	

2° 39'		LOG. SINES, &c. (1.)						59 deg.	
sec.	min.	sine	coscant.	tangent	cotangent.	secant.	cosec.	sec.	min.
0	45	9.806799	10.194201	9.919062	10.080938	10.114163	9.885837	15	45
1	15	9.805837	10.194163	9.920026	10.079974	10.114189	9.885811	45	30
2	30	9.805875	10.194125	9.920091	10.079909	10.114216	9.885784	30	15
3	45	9.805913	10.194087	9.920156	10.079845	10.114242	9.885758	15	0
4	46	9.805951	10.194049	9.920219	10.079781	10.114268	9.885732	14	45
5	15	9.805989	10.194011	9.920283	10.079717	10.114294	9.885706	45	30
6	30	9.806027	10.193973	9.920347	10.079653	10.114321	9.885679	30	15
7	45	9.806065	10.193935	9.920412	10.079588	10.114347	9.885653	15	0
8	47	9.806103	10.193897	9.920476	10.079524	10.114373	9.885627	13	45
9	15	9.806141	10.193859	9.920540	10.079460	10.114400	9.885600	45	30
10	30	9.806179	10.193821	9.920604	10.079396	10.114426	9.885574	30	15
11	45	9.806216	10.193784	9.920669	10.079331	10.114452	9.885548	15	0
12	48	9.806254	10.193746	9.920733	10.079267	10.114479	9.885521	12	45
13	15	9.806292	10.193708	9.920797	10.079203	10.114505	9.885495	45	30
14	30	9.806330	10.193670	9.920861	10.079139	10.114531	9.885469	30	15
15	45	9.806368	10.193632	9.920925	10.079075	10.114557	9.885443	15	0
16	49	9.806406	10.193594	9.920990	10.079010	10.114584	9.885416	11	45
17	15	9.806444	10.193556	9.921054	10.078946	10.114610	9.885390	45	30
18	30	9.806482	10.193518	9.921118	10.078882	10.114636	9.885364	30	15
19	45	9.806520	10.193480	9.921182	10.078818	10.114663	9.885337	15	0
20	50	9.806557	10.193443	9.921247	10.078753	10.114689	9.885311	10	45
21	15	9.806595	10.193405	9.921311	10.078689	10.114716	9.885284	45	30
22	30	9.806633	10.193367	9.921376	10.078625	10.114742	9.885258	30	15
23	45	9.806671	10.193329	9.921439	10.078561	10.114768	9.885232	15	0
24	51	9.806709	10.193291	9.921503	10.078497	10.114795	9.885206	9	45
25	15	9.806747	10.193253	9.921568	10.078432	10.114821	9.885179	45	30
26	30	9.806785	10.193215	9.921632	10.078368	10.114847	9.885153	30	15
27	45	9.806823	10.193178	9.921696	10.078304	10.114874	9.885126	15	0
28	52	9.806860	10.193140	9.921760	10.078240	10.114900	9.885100	8	45
29	15	9.806898	10.193102	9.921824	10.078176	10.114926	9.885074	45	30
30	30	9.806936	10.193064	9.921889	10.078111	10.114953	9.885047	30	15
31	45	9.806974	10.193026	9.921953	10.078047	10.114979	9.885021	15	0
32	53	9.807011	10.192989	9.922017	10.077983	10.115006	9.884994	7	45
33	15	9.807049	10.192951	9.922081	10.077919	10.115032	9.884968	45	30
34	30	9.807087	10.192913	9.922145	10.077855	10.115058	9.884942	30	15
35	45	9.807125	10.192875	9.922209	10.077791	10.115085	9.884915	15	0
36	54	9.807163	10.192837	9.922274	10.077726	10.115111	9.884889	6	45
37	15	9.807200	10.192800	9.922338	10.077662	10.115138	9.884862	45	30
38	30	9.807238	10.192762	9.922402	10.077598	10.115164	9.884836	30	15
39	45	9.807276	10.192724	9.922466	10.077534	10.115190	9.884810	15	0
40	55	9.807314	10.192686	9.922530	10.077470	10.115217	9.884783	5	45
41	15	9.807351	10.192649	9.922595	10.077405	10.115243	9.884757	45	30
42	30	9.807389	10.192611	9.922659	10.077341	10.115270	9.884730	30	15
43	45	9.807427	10.192573	9.922723	10.077277	10.115296	9.884704	15	0
44	56	9.807465	10.192535	9.922787	10.077213	10.115323	9.884677	4	45
45	15	9.807502	10.192498	9.922851	10.077149	10.115349	9.884651	45	30
46	30	9.807540	10.192460	9.922915	10.077085	10.115375	9.884625	30	15
47	45	9.807578	10.192422	9.922980	10.077020	10.115402	9.884598	15	0
48	57	9.807615	10.192385	9.923044	10.076956	10.115428	9.884572	3	45
49	15	9.807653	10.192347	9.923108	10.076892	10.115455	9.884545	45	30
50	30	9.807691	10.192309	9.923172	10.076828	10.115481	9.884519	30	15
51	45	9.807728	10.192272	9.923236	10.076764	10.115508	9.884492	15	0
52	58	9.807766	10.192234	9.923300	10.076700	10.115534	9.884466	2	45
53	15	9.807804	10.192196	9.923364	10.076636	10.115561	9.884439	45	30
54	30	9.807842	10.192158	9.923429	10.076571	10.115587	9.884413	30	15
55	45	9.807879	10.192121	9.923493	10.076507	10.115614	9.884386	15	0
56	59	9.807917	10.192083	9.923557	10.076443	10.115640	9.884360	1	45
57	15	9.807955	10.192045	9.923621	10.076379	10.115667	9.884333	45	30
58	30	9.807993	10.192008	9.923685	10.076315	10.115693	9.884307	30	15
59	45	9.808030	10.191970	9.923749	10.076251	10.115720	9.884280	15	0
60	(6)	9.808067	10.191933	9.923813	10.076187	10.115746	9.884254	0	
sec.	min.	sine	coscant.	tangent	cotangent.	secant.	cosec.	sec.	min.
3° 20'		LOG. SINES, &c.						50 deg.	

2 ^d 40 ^m .		LOG. SINES, &c. (t.)					40 deg.	
'	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	'
0		9.808067	10.191933	9.923813	10.076187	10.115746	9.884254	60
15		9.808106	10.191895	9.923878	10.076122	10.115773	9.884227	45
30		9.808143	10.191857	9.923942	10.076058	10.115799	9.884201	30
45		9.808180	10.191820	9.924006	10.075994	10.115826	9.884174	15
1		9.808218	10.191782	9.924070	10.075930	10.115852	9.884148	59
15		9.808256	10.191744	9.924134	10.075866	10.115879	9.884121	45
30		9.808293	10.191707	9.924198	10.075802	10.115905	9.884095	30
45		9.808331	10.191669	9.924262	10.075738	10.115932	9.884068	15
2		9.808368	10.191632	9.924327	10.075673	10.115958	9.884042	58
15		9.808406	10.191594	9.924391	10.075609	10.115985	9.884015	45
30		9.808444	10.191556	9.924455	10.075545	10.116011	9.883989	30
45		9.808481	10.191519	9.924519	10.075481	10.116038	9.883962	15
3		9.808519	10.191481	9.924583	10.075417	10.116064	9.883936	57
15		9.808556	10.191444	9.924647	10.075353	10.116091	9.883909	45
30		9.808594	10.191406	9.924711	10.075289	10.116117	9.883883	30
45		9.808631	10.191369	9.924775	10.075225	10.116144	9.883856	15
4		9.808669	10.191331	9.924840	10.075160	10.116171	9.883829	56
15		9.808707	10.191293	9.924904	10.075096	10.116197	9.883803	45
30		9.808744	10.191256	9.924968	10.075032	10.116224	9.883776	30
45		9.808782	10.191218	9.925032	10.074968	10.116250	9.883750	15
5		9.808819	10.191181	9.925096	10.074904	10.116277	9.883723	55
15		9.808857	10.191143	9.925160	10.074840	10.116303	9.883697	45
30		9.808894	10.191106	9.925224	10.074776	10.116330	9.883670	30
45		9.808932	10.191068	9.925288	10.074712	10.116357	9.883643	15
6		9.808969	10.191031	9.925352	10.074648	10.116383	9.883617	54
15		9.809007	10.190993	9.925416	10.074584	10.116410	9.883590	45
30		9.809044	10.190956	9.925481	10.074519	10.116436	9.883564	30
45		9.809082	10.190918	9.925545	10.074455	10.116463	9.883537	15
7		9.809119	10.190881	9.925609	10.074391	10.116490	9.883510	53
15		9.809157	10.190843	9.925673	10.074327	10.116516	9.883484	45
30		9.809194	10.190806	9.925737	10.074263	10.116543	9.883457	30
45		9.809232	10.190768	9.925801	10.074199	10.116570	9.883430	15
8		9.809269	10.190731	9.925865	10.074135	10.116596	9.883404	52
15		9.809307	10.190693	9.925929	10.074071	10.116623	9.883377	45
30		9.809344	10.190656	9.925993	10.074007	10.116649	9.883351	30
45		9.809381	10.190619	9.926057	10.073943	10.116676	9.883324	15
9		9.809419	10.190581	9.926121	10.073879	10.116703	9.883297	51
15		9.809456	10.190544	9.926186	10.073814	10.116729	9.883271	45
30		9.809494	10.190506	9.926250	10.073750	10.116756	9.883244	30
45		9.809531	10.190469	9.926314	10.073686	10.116783	9.883217	15
10		9.809569	10.190431	9.926378	10.073622	10.116809	9.883191	50
15		9.809606	10.190394	9.926442	10.073558	10.116836	9.883164	45
30		9.809643	10.190357	9.926506	10.073494	10.116863	9.883137	30
45		9.809681	10.190319	9.926570	10.073430	10.116889	9.883111	15
11		9.809718	10.190282	9.926634	10.073366	10.116916	9.883084	49
15		9.809756	10.190244	9.926698	10.073302	10.116943	9.883057	45
30		9.809793	10.190207	9.926762	10.073238	10.116969	9.883031	30
45		9.809830	10.190170	9.926826	10.073174	10.116996	9.883004	15
12		9.809868	10.190132	9.926890	10.073110	10.117023	9.882977	48
15		9.809905	10.190095	9.926954	10.073046	10.117049	9.882951	45
30		9.809942	10.190058	9.927018	10.072982	10.117076	9.882924	30
45		9.809980	10.190020	9.927083	10.072917	10.117103	9.882897	15
13		9.810017	10.189983	9.927147	10.072853	10.117129	9.882871	47
15		9.810055	10.189945	9.927211	10.072789	10.117156	9.882844	45
30		9.810092	10.189908	9.927275	10.072725	10.117183	9.882817	30
45		9.810129	10.189871	9.927339	10.072661	10.117210	9.882790	15
14		9.810167	10.189833	9.927403	10.072597	10.117236	9.882764	46
15		9.810204	10.189796	9.927467	10.072533	10.117263	9.882737	45
30		9.810241	10.189759	9.927531	10.072469	10.117290	9.882710	30
45		9.810278	10.189722	9.927595	10.072405	10.117316	9.882684	15
15		9.810316	10.189684	9.927659	10.072341	10.117343	9.882657	45
		cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	
3 ^d 19 ^m		LOG. SINES, &c.					49 deg.	

2 ^h 41 ^m .		LOG. SINES, &c. (L)						40 deg.
sec.	"	sine.	coscant.	tangent.	cotangent.	secant.	cosec.	"
0	15	9.810316	10.189084	9.927659	10.072341	10.117343	9.882657	45
1	15	9.810353	10.189047	9.927723	10.072277	10.117370	9.882630	45
2	30	9.810390	10.189010	9.927787	10.072213	10.117397	9.882603	30
3	45	9.810428	10.188973	9.927851	10.072149	10.117423	9.882577	15
4	16	9.810465	10.188935	9.927915	10.072085	10.117450	9.882550	44
5	15	9.810502	10.188908	9.927979	10.072021	10.117477	9.882523	45
6	30	9.810540	10.188940	9.928043	10.071957	10.117504	9.882496	30
7	45	9.810577	10.188923	9.928107	10.071893	10.117530	9.882470	15
8	17	9.810614	10.188986	9.928171	10.071829	10.117557	9.882443	43
9	15	9.810651	10.188949	9.928235	10.071765	10.117584	9.882416	45
10	30	9.810689	10.188911	9.928299	10.071701	10.117611	9.882389	30
11	45	9.810726	10.188974	9.928363	10.071637	10.117638	9.882362	15
12	18	9.810763	10.188937	9.928427	10.071573	10.117664	9.882336	42
13	15	9.810800	10.188900	9.928491	10.071509	10.117691	9.882309	45
14	30	9.810838	10.188962	9.928555	10.071445	10.117718	9.882282	30
15	45	9.810875	10.188925	9.928619	10.071381	10.117745	9.882255	15
16	19	9.810912	10.188988	9.928683	10.071317	10.117772	9.882228	41
17	15	9.810949	10.188951	9.928747	10.071253	10.117798	9.882202	45
18	30	9.810986	10.188914	9.928812	10.071188	10.117825	9.882175	30
19	45	9.811024	10.188976	9.928876	10.071124	10.117852	9.882148	15
20	20	9.811061	10.188939	9.928940	10.071060	10.117879	9.882121	40
21	15	9.811098	10.188902	9.929004	10.070996	10.117906	9.882094	45
22	30	9.811135	10.188965	9.929068	10.070932	10.117932	9.882068	30
23	45	9.811172	10.188928	9.929132	10.070868	10.117959	9.882041	15
24	21	9.811210	10.188990	9.929196	10.070804	10.117986	9.882014	39
25	15	9.811247	10.188953	9.929260	10.070740	10.118013	9.881987	45
26	30	9.811284	10.188916	9.929324	10.070676	10.118040	9.881960	30
27	45	9.811321	10.188879	9.929388	10.070612	10.118067	9.881933	15
28	22	9.811358	10.188942	9.929452	10.070548	10.118093	9.881907	38
29	15	9.811395	10.188905	9.929516	10.070484	10.118120	9.881880	45
30	30	9.811433	10.188968	9.929580	10.070420	10.118147	9.881853	30
31	45	9.811470	10.188931	9.929644	10.070356	10.118174	9.881826	15
32	23	9.811507	10.188994	9.929708	10.070292	10.118201	9.881799	37
33	15	9.811544	10.188957	9.929772	10.070228	10.118228	9.881772	45
34	30	9.811581	10.188920	9.929836	10.070164	10.118255	9.881745	30
35	45	9.811618	10.188983	9.929900	10.070100	10.118281	9.881719	15
36	24	9.811655	10.188946	9.929964	10.070036	10.118308	9.881692	36
37	15	9.811692	10.188909	9.930028	10.069972	10.118335	9.881665	45
38	30	9.811730	10.188972	9.930092	10.069908	10.118362	9.881638	30
39	45	9.811767	10.188935	9.930156	10.069844	10.118389	9.881611	15
40	25	9.811804	10.188998	9.930219	10.069781	10.118416	9.881584	35
41	15	9.811841	10.188961	9.930283	10.069717	10.118443	9.881557	45
42	30	9.811878	10.188924	9.930347	10.069653	10.118470	9.881530	30
43	45	9.811915	10.188987	9.930411	10.069589	10.118497	9.881503	15
44	26	9.811952	10.188950	9.930475	10.069525	10.118523	9.881477	34
45	15	9.811989	10.188913	9.930539	10.069461	10.118550	9.881450	45
46	30	9.812026	10.188976	9.930603	10.069397	10.118577	9.881423	30
47	45	9.812063	10.188939	9.930667	10.069333	10.118604	9.881396	15
48	27	9.812100	10.188902	9.930731	10.069269	10.118631	9.881369	33
49	15	9.812137	10.188965	9.930795	10.069205	10.118658	9.881342	45
50	30	9.812174	10.188928	9.930859	10.069141	10.118685	9.881315	30
51	45	9.812211	10.188991	9.930923	10.069077	10.118712	9.881288	15
52	28	9.812248	10.188954	9.930987	10.069013	10.118739	9.881261	32
53	15	9.812285	10.188917	9.931051	10.068949	10.118766	9.881234	45
54	30	9.812322	10.188980	9.931115	10.068885	10.118793	9.881207	30
55	45	9.812359	10.188943	9.931179	10.068821	10.118820	9.881180	15
56	29	9.812396	10.188906	9.931243	10.068757	10.118847	9.881153	31
57	15	9.812433	10.188969	9.931307	10.068693	10.118874	9.881126	45
58	30	9.812470	10.188932	9.931371	10.068629	10.118901	9.881099	30
59	45	9.812507	10.188995	9.931435	10.068565	10.118928	9.881072	15
60	30	9.812544	10.188958	9.931499	10.068501	10.118955	9.881045	30
sec.	"	sine.	coscant.	tangent.	cotangent.	secant.	cosec.	"
3 ^h 18 ^m .		LOG. SINES, &c.						49 deg.

2° 42'.		LOG. SINES, &c. (L.)						40 deg.	
sec.	min.	sine.	coscant.	tangent.	cotangent.	secant.	cosec.	sec.	min.
0	30	9.813544	10.187456	9.931499	10.068501	10.118955	9.881045	30	00
1	15	9.812681	10.187319	9.931563	10.068437	10.118982	9.881018	45	15
2	30	9.812618	10.187382	9.931627	10.068373	10.119006	9.880992	30	30
3	45	9.812555	10.187345	9.931691	10.068309	10.119033	9.880965	15	45
4	31	9.812692	10.187308	9.931755	10.068245	10.119062	9.880938	29	11
5	15	9.812729	10.187271	9.931819	10.068181	10.119089	9.880911	45	55
6	30	9.812766	10.187234	9.931883	10.068117	10.119116	9.880884	30	54
7	11	9.812803	10.187197	9.931946	10.068054	10.119143	9.880857	15	53
8	32	9.812840	10.187160	9.932010	10.067990	10.119170	9.880830	25	52
9	15	9.812877	10.187123	9.932074	10.067926	10.119197	9.880803	45	51
10	30	9.812914	10.187086	9.932138	10.067862	10.119224	9.880776	30	50
11	45	9.812951	10.187049	9.932202	10.067798	10.119251	9.880749	15	49
12	33	9.812988	10.187012	9.932266	10.067734	10.119279	9.880721	27	48
13	15	9.813025	10.186975	9.932330	10.067670	10.119306	9.880694	45	47
14	30	9.813062	10.186938	9.932394	10.067606	10.119333	9.880667	30	46
15	11	9.813098	10.186902	9.932458	10.067542	10.119360	9.880640	15	45
16	34	9.813135	10.186865	9.932522	10.067478	10.119387	9.880613	26	44
17	15	9.813172	10.186828	9.932586	10.067414	10.119414	9.880586	45	43
18	30	9.813209	10.186791	9.932650	10.067350	10.119441	9.880559	30	42
19	11	9.813246	10.186754	9.932714	10.067286	10.119468	9.880532	15	41
20	35	9.813283	10.186717	9.932778	10.067222	10.119495	9.880505	25	40
21	15	9.813320	10.186680	9.932842	10.067158	10.119522	9.880478	45	39
22	30	9.813357	10.186643	9.932906	10.067094	10.119549	9.880451	30	38
23	45	9.813393	10.186607	9.932969	10.067031	10.119576	9.880424	15	37
24	36	9.813430	10.186570	9.933033	10.066967	10.119603	9.880397	24	36
25	15	9.813467	10.186533	9.933097	10.066903	10.119630	9.880370	45	35
26	30	9.813504	10.186496	9.933161	10.066839	10.119657	9.880343	30	34
27	45	9.813541	10.186459	9.933225	10.066775	10.119684	9.880316	15	33
28	37	9.813578	10.186422	9.933289	10.066711	10.119711	9.880289	23	32
29	15	9.813614	10.186386	9.933353	10.066647	10.119738	9.880262	45	31
30	30	9.813651	10.186349	9.933417	10.066583	10.119766	9.880234	30	30
31	45	9.813688	10.186312	9.933481	10.066519	10.119793	9.880207	15	29
32	38	9.813725	10.186275	9.933545	10.066455	10.119820	9.880180	22	28
33	15	9.813762	10.186238	9.933609	10.066391	10.119847	9.880153	45	27
34	30	9.813799	10.186201	9.933672	10.066328	10.119874	9.880126	30	26
35	45	9.813836	10.186165	9.933736	10.066264	10.119901	9.880099	15	25
36	39	9.813872	10.186128	9.933800	10.066200	10.119928	9.880072	21	24
37	15	9.813909	10.186091	9.933864	10.066136	10.119955	9.880045	45	23
38	30	9.813946	10.186054	9.933928	10.066072	10.119982	9.880018	30	22
39	45	9.813982	10.186018	9.933992	10.066008	10.120010	9.879990	15	21
40	40	9.814019	10.185981	9.934056	10.065944	10.120037	9.879963	20	20
41	15	9.814056	10.185944	9.934120	10.065880	10.120064	9.879936	45	19
42	30	9.814093	10.185907	9.934184	10.065816	10.120091	9.879909	30	18
43	45	9.814129	10.185871	9.934247	10.065753	10.120118	9.879882	15	17
44	41	9.814166	10.185834	9.934311	10.065689	10.120145	9.879855	19	16
45	15	9.814203	10.185797	9.934375	10.065625	10.120172	9.879828	45	15
46	30	9.814240	10.185760	9.934439	10.065561	10.120200	9.879800	30	14
47	45	9.814276	10.185724	9.934503	10.065497	10.120227	9.879773	15	13
48	42	9.814313	10.185687	9.934567	10.065433	10.120254	9.879746	18	12
49	15	9.814350	10.185650	9.934631	10.065369	10.120281	9.879719	45	11
50	30	9.814387	10.185613	9.934695	10.065305	10.120309	9.879692	30	10
51	45	9.814423	10.185577	9.934759	10.065241	10.120335	9.879665	15	9
52	43	9.814460	10.185540	9.934822	10.065178	10.120363	9.879637	17	8
53	15	9.814497	10.185503	9.934886	10.065114	10.120390	9.879610	45	7
54	30	9.814533	10.185467	9.934950	10.065050	10.120417	9.879583	30	6
55	45	9.814570	10.185430	9.935014	10.064986	10.120444	9.879556	15	5
56	44	9.814607	10.185393	9.935078	10.064922	10.120471	9.879529	16	4
57	15	9.814643	10.185357	9.935142	10.064858	10.120499	9.879501	45	3
58	30	9.814680	10.185320	9.935206	10.064794	10.120526	9.879474	30	2
59	11	9.814717	10.185283	9.935270	10.064730	10.120553	9.879447	15	1
60	45	9.814753	10.185247	9.935333	10.064667	10.120580	9.879420	15	0
sec.	min.	sine.	coscant.	tangent.	cotangent.	secant.	cosec.	sec.	min.
2° 17'.		LOG. SINES, &c.						49 deg.	

2° 43'		LOG. SINES, &c. (t.)						40 deg	
no.	"	sine.	coscant.	tangent.	cotangent.	secant.	cosec.	"	"
0	45	9.814753	10.185247	9.935333	10.064667	10.120580	9.879420	15	
1	15	9.814790	10.185210	9.935397	10.064603	10.120607	9.879393	45	
2	30	9.814827	10.185173	9.935461	10.064539	10.120635	9.879365	30	
3	45	9.814863	10.185137	9.935525	10.064475	10.120662	9.879338	15	
4	46	9.814900	10.185100	9.935589	10.064411	10.120689	9.879311	14	
5	15	9.814937	10.185063	9.935653	10.064347	10.120716	9.879284	45	
6	30	9.814973	10.185027	9.935717	10.064283	10.120744	9.879256	30	
7	45	9.815010	10.184990	9.935780	10.064220	10.120771	9.879229	15	
8	47	9.815046	10.184954	9.935844	10.064156	10.120798	9.879202	13	
9	■	9.815083	10.184917	9.935908	10.064092	10.120825	9.879175	45	
10	30	9.815120	10.184880	9.935972	10.064028	10.120852	9.879148	30	
11	45	9.815156	10.184844	9.936036	10.063964	10.120880	9.879120	15	
12	48	9.815193	10.184807	9.936100	10.063900	10.120907	9.879093	12	
13	15	9.815229	10.184771	9.936164	10.063836	10.120934	9.879066	45	
14	30	9.815266	10.184734	9.936227	10.063773	10.120962	9.879038	30	
15	45	9.815303	10.184697	9.936291	10.063709	10.120989	9.879011	15	
16	49	9.815339	10.184661	9.936355	10.063645	10.121016	9.878984	11	
17	15	9.815376	10.184624	9.936419	10.063581	10.121043	9.878957	45	
18	30	9.815412	10.184588	9.936483	10.063517	10.121071	9.878929	30	
19	45	9.815449	10.184551	9.936547	10.063453	10.121098	9.878902	15	
20	50	9.815485	10.184515	9.936610	10.063389	10.121125	9.878875	10	
21	15	9.815522	10.184478	9.936674	10.063326	10.121153	9.878847	45	
22	30	9.815558	10.184442	9.936738	10.063262	10.121180	9.878820	30	
23	■	9.815595	10.184405	9.936802	10.063198	10.121207	9.878793	15	
24	51	9.815631	10.184369	9.936866	10.063134	10.121234	9.878766	9	
25	15	9.815668	10.184332	9.936930	10.063070	10.121262	9.878738	45	
26	30	9.815704	10.184296	9.936994	10.063006	10.121289	9.878711	30	
27	45	9.815741	10.184259	9.937057	10.062943	10.121316	9.878684	15	
28	52	9.815778	10.184222	9.937121	10.062879	10.121344	9.878656	8	
29	■	9.815814	10.184186	9.937185	10.062815	10.121371	9.878629	45	
30	30	9.815851	10.184149	9.937249	10.062751	10.121398	9.878602	30	
31	45	9.815887	10.184113	9.937313	10.062687	10.121426	9.878574	15	
32	53	9.815924	10.184077	9.937376	10.062624	10.121453	9.878547	7	
33	15	9.815960	10.184040	9.937440	10.062560	10.121480	9.878520	45	
34	30	9.815996	10.184004	9.937504	10.062496	10.121508	9.878492	30	
35	45	9.816033	10.183967	9.937568	10.062432	10.121535	9.878465	15	
36	54	9.816069	10.183931	9.937632	10.062368	10.121562	9.878438	6	
37	15	9.816106	10.183894	9.937696	10.062304	10.121590	9.878410	45	
38	30	9.816142	10.183858	9.937759	10.062241	10.121617	9.878383	30	
39	■	9.816179	10.183821	9.937823	10.062177	10.121645	9.878355	15	
40	55	9.816215	10.183785	9.937887	10.062113	10.121672	9.878328	5	
41	15	9.816252	10.183748	9.937951	10.062049	10.121699	9.878301	45	
42	30	9.816288	10.183712	9.938015	10.061985	10.121727	9.878273	30	
43	45	9.816324	10.183676	9.938078	10.061922	10.121754	9.878246	15	
44	56	9.816361	10.183639	9.938142	10.061858	10.121781	9.878219	4	
45	15	9.816397	10.183603	9.938206	10.061794	10.121809	9.878191	45	
46	30	9.816434	10.183566	9.938270	10.061730	10.121836	9.878164	30	
47	45	9.816470	10.183530	9.938334	10.061666	10.121864	9.878136	15	
48	57	9.816507	10.183493	9.938397	10.061603	10.121891	9.878109	3	
49	15	9.816543	10.183457	9.938461	10.061539	10.121918	9.878082	45	
50	30	9.816579	10.183421	9.938525	10.061475	10.121946	9.878054	30	
51	45	9.816616	10.183384	9.938589	10.061411	10.121973	9.878027	15	
52	58	9.816652	10.183348	9.938653	10.061347	10.122001	9.877999	2	
53	15	9.816688	10.183312	9.938716	10.061284	10.122028	9.877972	45	
54	30	9.816725	10.183275	9.938780	10.061220	10.122056	9.877944	30	
55	45	9.816761	10.183239	9.938844	10.061156	10.122083	9.877917	15	
56	59	9.816797	10.183203	9.938908	10.061092	10.122110	9.877890	1	
57	15	9.816834	10.183166	9.938972	10.061028	10.122138	9.877862	45	
58	30	9.816870	10.183130	9.939036	10.060963	10.122165	9.877835	30	
59	45	9.816907	10.183093	9.939099	10.060899	10.122193	9.877807	15	
60	60	9.816943	10.183057	9.939163	10.060835	10.122220	9.877780	0	
sec.	"	cosec.	secant.	cotangent.	tangent.	cosecant.	sine.	"	"
3° 16'		LOG. SINES, &c.						49 deg.	

24 44		LOG. SINES, &c. (t.)						41 deg.	
sec.	min.	sin.	cos.	tan.	cot.	sec.	cosec.	sec.	min.
0	0	9.816843	10.183067	9.939183	10.060817	10.122220	9.877780	60	60
1	15	9.816979	10.183021	9.939227	10.060773	10.122248	9.877752	45	59
2	30	9.817016	10.182984	9.939291	10.060709	10.122276	9.877725	30	58
3	45	9.817052	10.182948	9.939354	10.060646	10.122303	9.877697	15	57
4	1	9.817088	10.182912	9.939418	10.060582	10.122330	9.877670	59	56
5	15	9.817124	10.182876	9.939482	10.060518	10.122358	9.877642	45	55
6	30	9.817161	10.182839	9.939546	10.060454	10.122386	9.877615	30	54
7	45	9.817197	10.182803	9.939609	10.060391	10.122412	9.877588	15	53
8	2	9.817233	10.182767	9.939673	10.060327	10.122440	9.877560	58	52
9	15	9.817270	10.182730	9.939737	10.060263	10.122467	9.877533	45	51
10	30	9.817306	10.182694	9.939801	10.060199	10.122495	9.877506	30	50
11	45	9.817342	10.182658	9.939865	10.060135	10.122522	9.877478	15	49
12	3	9.817378	10.182622	9.939928	10.060072	10.122550	9.877450	57	48
13	15	9.817415	10.182585	9.939992	10.060008	10.122577	9.877423	45	47
14	30	9.817451	10.182549	9.940056	10.059944	10.122605	9.877395	30	46
15	45	9.817487	10.182513	9.940120	10.059880	10.122632	9.877368	15	45
16	4	9.817523	10.182477	9.940183	10.059817	10.122660	9.877340	56	44
17	15	9.817560	10.182440	9.940247	10.059753	10.122687	9.877313	45	43
18	30	9.817596	10.182404	9.940311	10.059689	10.122715	9.877285	30	42
19	45	9.817632	10.182368	9.940375	10.059625	10.122743	9.877257	15	41
20	5	9.817668	10.182332	9.940438	10.059562	10.122770	9.877230	55	40
21	15	9.817705	10.182295	9.940502	10.059498	10.122798	9.877202	45	39
22	30	9.817741	10.182259	9.940566	10.059434	10.122825	9.877175	30	38
23	45	9.817777	10.182223	9.940630	10.059370	10.122853	9.877147	15	37
24	6	9.817813	10.182187	9.940694	10.059306	10.122880	9.877120	54	36
25	15	9.817849	10.182151	9.940757	10.059243	10.122908	9.877092	45	35
26	30	9.817886	10.182114	9.940821	10.059179	10.122935	9.877065	30	34
27	45	9.817922	10.182078	9.940885	10.059115	10.122963	9.877037	15	33
28	7	9.817958	10.182042	9.940948	10.059051	10.122990	9.877010	53	32
29	15	9.817994	10.182006	9.941012	10.058988	10.123018	9.876982	45	31
30	30	9.818030	10.181970	9.941076	10.058924	10.123046	9.876954	30	30
31	45	9.818067	10.181933	9.941140	10.058860	10.123073	9.876927	15	29
32	8	9.818103	10.181897	9.941204	10.058796	10.123101	9.876899	52	28
33	15	9.818139	10.181861	9.941267	10.058733	10.123128	9.876872	45	27
34	30	9.818175	10.181825	9.941331	10.058669	10.123156	9.876844	30	26
35	45	9.818211	10.181789	9.941395	10.058605	10.123184	9.876816	15	25
36	9	9.818247	10.181753	9.941458	10.058542	10.123211	9.876789	51	24
37	15	9.818283	10.181717	9.941522	10.058478	10.123239	9.876761	45	23
38	30	9.818320	10.181680	9.941586	10.058414	10.123266	9.876734	30	22
39	45	9.818356	10.181644	9.941650	10.058350	10.123294	9.876706	15	21
40	10	9.818392	10.181608	9.941713	10.058287	10.123322	9.876678	50	20
41	15	9.818428	10.181572	9.941777	10.058223	10.123349	9.876651	45	19
42	30	9.818464	10.181536	9.941841	10.058159	10.123377	9.876623	30	18
43	45	9.818500	10.181500	9.941905	10.058095	10.123404	9.876596	15	17
44	11	9.818536	10.181464	9.941968	10.058032	10.123432	9.876568	49	16
45	15	9.818572	10.181428	9.942032	10.057968	10.123460	9.876540	45	15
46	30	9.818608	10.181391	9.942096	10.057904	10.123487	9.876513	30	14
47	45	9.818645	10.181355	9.942160	10.057840	10.123515	9.876485	15	13
48	12	9.818681	10.181319	9.942223	10.057777	10.123543	9.876457	48	12
49	15	9.818717	10.181283	9.942287	10.057713	10.123570	9.876430	45	11
50	30	9.818753	10.181247	9.942351	10.057649	10.123598	9.876402	30	10
51	45	9.818789	10.181211	9.942414	10.057586	10.123626	9.876374	15	9
52	13	9.818825	10.181175	9.942478	10.057522	10.123653	9.876347	47	8
53	15	9.818861	10.181139	9.942542	10.057458	10.123681	9.876319	45	7
54	30	9.818897	10.181103	9.942606	10.057394	10.123709	9.876291	30	6
55	45	9.818933	10.181067	9.942669	10.057331	10.123736	9.876264	15	5
56	14	9.818969	10.181031	9.942733	10.057267	10.123764	9.876236	46	4
57	15	9.819005	10.180995	9.942797	10.057203	10.123792	9.876208	45	3
58	30	9.819041	10.180959	9.942860	10.057140	10.123819	9.876181	30	2
59	45	9.819077	10.180923	9.942924	10.057076	10.123847	9.876153	15	1
60	15	9.819113	10.180887	9.942988	10.057012	10.123875	9.876125	45	0
sec.	min.	sin.	cos.	tan.	cot.	sec.	cosec.	sec.	min.
24 45		LOG. SINES, &c. (t.)						42 deg.	

2 ^d 45 ^m .		LOG. SINES, &c. (L)						41 deg.	
arc		sine.	coscant.	tangent.	cotangent.	secant.	cosec.	"	sec.
0	15	9.819113	10.180887	9.942988	10.057012	10.123875	9.876125	45	68
1	15	9.819149	10.180851	9.943052	10.056948	10.123902	9.876098	■	59
2	30	9.819185	10.180815	9.943115	10.056885	10.123930	9.876070	30	58
3	45	9.819221	10.180779	9.943179	10.056821	10.123958	9.876042	■	57
4	16	9.819257	10.180743	9.943243	10.056757	10.123986	9.876014	44	56
5	15	9.819293	10.180707	9.943306	10.056694	10.124013	9.875987	45	55
6	30	9.819329	10.180671	9.943370	10.056630	10.124041	9.875959	■	64
7	45	9.819365	10.180635	9.943434	10.056566	10.124069	9.875931	15	53
8	17	9.819401	10.180599	9.943498	10.056502	10.124096	9.875904	43	■
9	15	9.819437	10.180563	9.943561	10.056439	10.124124	9.875876	45	■
10	30	9.819473	10.180527	9.943625	10.056375	10.124152	9.875848	30	50
11	■	9.819509	10.180491	9.943689	10.056311	10.124180	9.875820	15	49
12	18	9.819545	10.180455	9.943752	10.056248	10.124207	9.875793	42	48
13	15	9.819581	10.180419	9.943816	10.056184	10.124235	9.875765	45	47
14	30	9.819617	10.180383	9.943880	10.056120	10.124263	9.875737	30	46
15	45	9.819653	10.180347	9.943943	10.056057	10.124291	9.875709	15	45
16	19	9.819689	10.180311	9.944007	10.055993	10.124318	9.875682	41	■
17	15	9.819725	10.180275	9.944071	10.055929	10.124346	9.875654	45	43
18	■	9.819761	10.180239	9.944134	10.055866	10.124374	9.875626	30	42
19	45	9.819797	10.180203	9.944198	10.055802	10.124402	9.875598	15	41
20	20	9.819833	10.180168	9.944262	10.055738	10.124429	9.875571	40	40
21	■	9.819869	10.180132	9.944326	10.055674	10.124457	9.875543	45	39
22	30	9.819904	10.180096	9.944389	10.055611	10.124485	9.875515	30	38
23	45	9.819940	10.180060	9.944453	10.055547	10.124513	9.875487	15	37
24	21	9.819976	10.180024	9.944517	10.055483	10.124541	9.875459	39	36
25	15	9.820012	10.179988	9.944580	10.055420	10.124568	9.875432	45	35
26	30	9.820048	10.179952	9.944644	10.055356	10.124596	9.875404	30	34
27	45	9.820084	10.179916	9.944708	10.055292	10.124624	9.875376	15	33
28	22	9.820120	10.179880	9.944771	10.055229	10.124652	9.875348	38	32
29	15	9.820155	10.179845	9.944835	10.055165	10.124680	9.875320	45	31
30	30	9.820191	10.179809	9.944899	10.055101	10.124707	9.875293	30	30
31	45	9.820227	10.179773	9.944962	10.055038	10.124735	9.875265	15	29
32	23	9.820263	10.179737	9.945026	10.054974	10.124763	9.875237	37	28
33	15	9.820299	10.179701	9.945090	10.054910	10.124791	9.875209	45	27
34	■	9.820335	10.179665	9.945153	10.054847	10.124819	9.875181	30	26
35	45	9.820370	10.179630	9.945217	10.054783	10.124847	9.875153	15	25
36	24	9.820406	10.179594	9.945281	10.054719	10.124874	9.875126	36	24
37	15	9.820442	10.179558	9.945344	10.054656	10.124902	9.875098	45	23
38	30	9.820478	10.179522	9.945408	10.054592	10.124930	9.875070	30	22
39	■	9.820514	10.179486	9.945472	10.054528	10.124958	9.875042	15	21
40	25	9.820550	10.179450	9.945535	10.054465	10.124986	9.875014	35	20
41	15	9.820585	10.179415	9.945599	10.054401	10.125014	9.874986	45	19
42	30	9.820621	10.179379	9.945663	10.054337	10.125042	9.874958	30	18
43	45	9.820657	10.179343	9.945726	10.054274	10.125069	9.874931	15	17
44	26	9.820693	10.179307	9.945790	10.054210	10.125097	9.874903	34	16
45	15	9.820728	10.179272	9.945854	10.054146	10.125125	9.874875	45	15
46	30	9.820764	10.179236	9.945917	10.054083	10.125153	9.874847	30	14
47	45	9.820800	10.179200	9.945981	10.054019	10.125181	9.874819	15	13
48	27	9.820836	10.179164	9.946045	10.053955	10.125209	9.874791	33	12
49	15	9.820872	10.179128	9.946108	10.053892	10.125237	9.874763	45	11
50	30	9.820907	10.179093	9.946172	10.053828	10.125265	9.874735	30	10
51	45	9.820943	10.179057	9.946236	10.053764	10.125293	9.874707	15	9
52	28	9.820979	10.179021	9.946299	10.053701	10.125321	9.874679	32	8
53	■	9.821015	10.178985	9.946363	10.053637	10.125348	9.874652	45	7
54	30	9.821050	10.178950	9.946427	10.053573	10.125376	9.874624	30	6
55	45	9.821086	10.178914	9.946490	10.053510	10.125404	9.874596	15	5
56	29	9.821122	10.178878	9.946554	10.053446	10.125432	9.874568	31	4
57	15	9.821157	10.178843	9.946617	10.053383	10.125460	9.874540	45	3
58	30	9.821193	10.178807	9.946681	10.053319	10.125488	9.874512	30	2
59	45	9.821229	10.178771	9.946745	10.053255	10.125516	9.874484	15	1
60	30	9.821265	10.178735	9.946808	10.053192	10.125544	9.874456	30	0
arc		cosine.	secant.	cotangent.	tangent	cosecant	sine	"	sec.
3 ^d 14 ^m .		LOG. SINES, &c.						46 deg.	

2° 46'		LOG. SINES, &c. (c.)						41 deg.	
min.	sec.	sine.	cosine.	tan.	cot.	secant.	cosecant.	min.	sec.
0	15	9.821265	10.178735	9.946808	10.053192	10.125544	9.874456	30	60
1	15	9.821300	10.178700	9.946872	10.053128	10.125572	9.874428	45	55
2	30	9.821336	10.178664	9.946936	10.053064	10.125600	9.874400	30	58
3	45	9.821372	10.178628	9.946999	10.053001	10.125628	9.874372	15	57
4	31	9.821407	10.178593	9.947063	10.052937	10.125656	9.874344	29	56
5	15	9.821441	10.178557	9.947127	10.052873	10.125684	9.874316	45	55
6	30	9.821479	10.178521	9.947190	10.052810	10.125712	9.874288	30	54
7	45	9.821511	10.178486	9.947254	10.052746	10.125740	9.874260	15	53
8	32	9.821546	10.178450	9.947317	10.052683	10.125768	9.874232	25	52
9	15	9.821586	10.178414	9.947381	10.052619	10.125796	9.874204	45	51
10	30	9.821621	10.178379	9.947445	10.052555	10.125824	9.874176	30	50
11	45	9.821657	10.178343	9.947508	10.052492	10.125852	9.874148	15	49
12	33	9.821691	10.178307	9.947572	10.052428	10.125880	9.874120	27	48
13	15	9.821728	10.178271	9.947636	10.052364	10.125908	9.874092	45	47
14	30	9.821764	10.178236	9.947699	10.052301	10.125935	9.874065	30	46
15	45	9.821799	10.178201	9.947763	10.052237	10.125963	9.874037	15	45
16	34	9.821835	10.178165	9.947826	10.052174	10.125992	9.874008	26	44
17	15	9.821871	10.178130	9.947889	10.052110	10.126020	9.873980	45	43
18	30	9.821906	10.178094	9.947954	10.052046	10.126048	9.873952	30	42
19	45	9.821943	10.178058	9.948017	10.051983	10.126076	9.873924	15	41
20	35	9.821977	10.178023	9.948081	10.051919	10.126104	9.873896	25	40
21	15	9.822013	10.177987	9.948145	10.051855	10.126132	9.873868	45	39
22	30	9.822049	10.177951	9.948209	10.051792	10.126160	9.873840	30	38
23	45	9.822084	10.177916	9.948272	10.051728	10.126188	9.873812	15	37
24	36	9.822120	10.177880	9.948335	10.051665	10.126216	9.873784	24	36
25	15	9.822155	10.177845	9.948399	10.051601	10.126244	9.873756	45	35
26	30	9.822191	10.177809	9.948463	10.051537	10.126272	9.873728	30	34
27	45	9.822226	10.177774	9.948526	10.051474	10.126300	9.873700	15	33
28	37	9.822262	10.177738	9.948590	10.051410	10.126328	9.873672	23	32
29	15	9.822298	10.177702	9.948653	10.051347	10.126356	9.873644	45	31
30	30	9.822333	10.177667	9.948717	10.051283	10.126384	9.873616	30	30
31	45	9.822369	10.177631	9.948781	10.051219	10.126412	9.873588	15	29
32	38	9.822404	10.177596	9.948844	10.051155	10.126440	9.873560	22	28
33	15	9.822440	10.177560	9.948908	10.051092	10.126468	9.873532	45	27
34	30	9.822475	10.177525	9.948971	10.051029	10.126496	9.873504	30	26
35	45	9.822511	10.177489	9.949035	10.050965	10.126524	9.873476	15	25
36	39	9.822546	10.177454	9.949099	10.050901	10.126552	9.873448	21	24
37	15	9.822582	10.177418	9.949162	10.050838	10.126581	9.873419	45	23
38	30	9.822617	10.177383	9.949226	10.050774	10.126609	9.873391	30	22
39	45	9.822653	10.177347	9.949289	10.050711	10.126637	9.873363	15	21
40	40	9.822688	10.177312	9.949353	10.050647	10.126665	9.873335	20	20
41	15	9.822724	10.177276	9.949417	10.050583	10.126693	9.873307	45	19
42	30	9.822759	10.177241	9.949480	10.050520	10.126721	9.873279	30	18
43	45	9.822795	10.177205	9.949544	10.050456	10.126749	9.873251	15	17
44	41	9.822830	10.177170	9.949607	10.050393	10.126777	9.873223	19	16
45	15	9.822866	10.177134	9.949671	10.050329	10.126805	9.873195	45	15
46	30	9.822901	10.177099	9.949735	10.050265	10.126834	9.873166	30	14
47	45	9.822937	10.177063	9.949798	10.050202	10.126862	9.873138	15	13
48	42	9.822972	10.177028	9.949862	10.050138	10.126890	9.873110	18	12
49	15	9.823007	10.176993	9.949925	10.050075	10.126918	9.873082	45	11
50	30	9.823043	10.176957	9.949989	10.050011	10.126946	9.873054	30	10
51	45	9.823078	10.176922	9.950053	10.049947	10.126974	9.873026	15	9
52	43	9.823114	10.176886	9.950116	10.049884	10.127002	9.872998	17	8
53	15	9.823149	10.176851	9.950180	10.049820	10.127031	9.872969	45	7
54	30	9.823185	10.176816	9.950243	10.049757	10.127059	9.872941	30	6
55	45	9.823220	10.176780	9.950307	10.049693	10.127087	9.872913	15	5
56	44	9.823255	10.176745	9.950370	10.049630	10.127115	9.872885	16	4
57	15	9.823291	10.176709	9.950434	10.049566	10.127143	9.872857	45	3
58	30	9.823326	10.176674	9.950498	10.049502	10.127171	9.872829	30	2
59	45	9.823362	10.176638	9.950561	10.049439	10.127200	9.872800	15	1
60	45	9.823397	10.176603	9.950625	10.049375	10.127228	9.872772	15	0
min.	sec.	sine.	cosine.	tan.	cot.	secant.	cosecant.	min.	sec.
3° 13'		LOG. SINES, &c.						48 deg.	

24 47°.		LOG. SINES, &c. (L)						41 deg.	
sec.	min.	sine.	coscant.	tangent.	cotangent.	secant.	cosine.	sec.	min.
0	45	9.823397	10.176603	9.950025	10.049975	10.127228	9.872772	15	00
1	15	9.823432	10.176568	9.950088	10.049912	10.127256	9.872744	45	59
2	30	9.823468	10.176532	9.950152	10.049848	10.127284	9.872716	30	58
3	45	9.823503	10.176497	9.950215	10.049785	10.127312	9.872688	15	57
4	46	9.823539	10.176461	9.950279	10.049721	10.127341	9.872659	14	56
5	15	9.823574	10.176426	9.950343	10.049657	10.127369	9.872631	45	55
6	30	9.823609	10.176391	9.950406	10.049594	10.127397	9.872603	30	54
7	45	9.823645	10.176355	9.950470	10.049530	10.127425	9.872575	15	53
8	47	9.823680	10.176320	9.950533	10.049467	10.127453	9.872547	13	52
9	15	9.823715	10.176285	9.950597	10.049403	10.127482	9.872518	45	51
10	30	9.823751	10.176249	9.950660	10.049340	10.127510	9.872490	30	50
11	45	9.823786	10.176214	9.950724	10.049276	10.127538	9.872462	15	49
12	48	9.823821	10.176179	9.950787	10.049212	10.127566	9.872434	12	48
13	15	9.823857	10.176143	9.950851	10.049148	10.127595	9.872405	45	47
14	30	9.823892	10.176108	9.950914	10.049085	10.127623	9.872377	30	46
15	45	9.823927	10.176073	9.950978	10.049021	10.127651	9.872349	15	45
16	49	9.823963	10.176037	9.951041	10.048958	10.127679	9.872321	11	44
17	15	9.823998	10.176002	9.951105	10.048894	10.127708	9.872292	45	43
18	30	9.824033	10.175967	9.951168	10.048831	10.127736	9.872264	30	42
19	45	9.824068	10.175932	9.951232	10.048767	10.127764	9.872236	15	41
20	50	9.824104	10.175896	9.951295	10.048704	10.127792	9.872208	10	40
21	15	9.824139	10.175861	9.951359	10.048640	10.127821	9.872179	45	39
22	30	9.824174	10.175826	9.951422	10.048577	10.127849	9.872151	30	38
23	45	9.824210	10.175790	9.951486	10.048513	10.127877	9.872123	15	37
24	51	9.824245	10.175755	9.951549	10.048450	10.127906	9.872094	9	36
25	15	9.824280	10.175720	9.951613	10.048386	10.127934	9.872066	45	35
26	30	9.824315	10.175685	9.951676	10.048323	10.127962	9.872038	30	34
27	45	9.824351	10.175649	9.951740	10.048259	10.127990	9.872010	15	33
28	52	9.824386	10.175614	9.951803	10.048196	10.128019	9.871981	8	32
29	15	9.824421	10.175579	9.951867	10.048132	10.128047	9.871953	45	31
30	30	9.824456	10.175544	9.951930	10.048069	10.128075	9.871925	30	30
31	45	9.824491	10.175509	9.951994	10.048005	10.128104	9.871896	15	29
32	53	9.824527	10.175473	9.952057	10.047942	10.128132	9.871868	7	28
33	15	9.824562	10.175438	9.952121	10.047878	10.128160	9.871840	45	27
34	30	9.824597	10.175403	9.952184	10.047815	10.128189	9.871811	30	26
35	45	9.824632	10.175368	9.952248	10.047751	10.128217	9.871783	15	25
36	54	9.824668	10.175332	9.952311	10.047688	10.128245	9.871755	6	24
37	15	9.824703	10.175297	9.952375	10.047624	10.128274	9.871726	45	23
38	30	9.824738	10.175262	9.952438	10.047561	10.128302	9.871698	30	22
39	45	9.824773	10.175227	9.952502	10.047497	10.128330	9.871670	15	21
40	55	9.824808	10.175192	9.952565	10.047434	10.128359	9.871641	5	20
41	15	9.824843	10.175157	9.952629	10.047370	10.128387	9.871613	45	19
42	30	9.824879	10.175121	9.952692	10.047307	10.128415	9.871585	30	18
43	45	9.824914	10.175086	9.952756	10.047243	10.128444	9.871556	15	17
44	56	9.824950	10.175051	9.952819	10.047180	10.128472	9.871528	4	16
45	15	9.824984	10.175016	9.952883	10.047116	10.128501	9.871499	45	15
46	30	9.825019	10.174981	9.952946	10.047053	10.128529	9.871471	30	14
47	45	9.825054	10.174946	9.953010	10.046989	10.128557	9.871443	15	13
48	57	9.825090	10.174910	9.953073	10.046926	10.128586	9.871414	3	12
49	15	9.825125	10.174875	9.953137	10.046862	10.128614	9.871386	45	11
50	30	9.825160	10.174840	9.953200	10.046799	10.128642	9.871358	30	10
51	45	9.825195	10.174805	9.953264	10.046735	10.128671	9.871329	15	9
52	58	9.825230	10.174770	9.953327	10.046672	10.128699	9.871301	2	8
53	15	9.825265	10.174735	9.953391	10.046608	10.128728	9.871272	45	7
54	30	9.825300	10.174700	9.953454	10.046545	10.128756	9.871244	30	6
55	45	9.825335	10.174665	9.953518	10.046481	10.128784	9.871216	15	5
56	59	9.825370	10.174630	9.953581	10.046418	10.128813	9.871187	1	4
57	15	9.825406	10.174594	9.953645	10.046354	10.128841	9.871159	45	3
58	30	9.825441	10.174559	9.953708	10.046291	10.128870	9.871130	30	2
59	45	9.825476	10.174524	9.953772	10.046227	10.128898	9.871102	15	1
60	60	9.825511	10.174489	9.953835	10.046164	10.128927	9.871073	0	0
sec.	min.	sine.	coscant.	tangent.	cotangent.	secant.	cosine.	sec.	min.
34 12°.		LOG. SINES, &c.						48 deg.	

48°.		LOG. SINES, &c. (L)						42 deg.	
sec.	"	sin.	coscant.	tan.	cotangent.	secant.	cscant.	"	sec.
0	0	9.826511	10.174489	9.934437	10.065563	10.128027	9.871073	60	60
1	15	9.826548	10.174454	9.934501	10.065499	10.128055	9.871045	45	59
2	30	9.826581	10.174419	9.934564	10.065436	10.128083	9.871017	30	58
3	45	9.826616	10.174384	9.934628	10.065372	10.128112	9.870989	15	57
4	1	9.826651	10.174349	9.934691	10.065309	10.128140	9.870960	59	56
5	15	9.826686	10.174314	9.934755	10.065246	10.128169	9.870931	45	55
6	30	9.826721	10.174279	9.934818	10.065182	10.128197	9.870903	30	54
7	45	9.826756	10.174244	9.934882	10.065118	10.128226	9.870874	15	53
8	2	9.826791	10.174209	9.934945	10.065055	10.128254	9.870846	58	52
9	15	9.826826	10.174174	9.935009	10.064991	10.128283	9.870817	45	51
10	30	9.826861	10.174139	9.935072	10.064928	10.128311	9.870789	30	50
11	45	9.826896	10.174104	9.935136	10.064864	10.128340	9.870760	15	49
12	3	9.826931	10.174069	9.935199	10.064801	10.128368	9.870732	57	48
13	15	9.826966	10.174034	9.935263	10.064737	10.128397	9.870703	45	47
14	30	9.826999	10.173999	9.935326	10.064674	10.128425	9.870675	30	46
15	45	9.827036	10.173964	9.935390	10.064610	10.128454	9.870646	15	45
16	4	9.827071	10.173929	9.935453	10.064547	10.128482	9.870618	56	44
17	15	9.827106	10.173894	9.935517	10.064483	10.128511	9.870589	45	43
18	30	9.827141	10.173859	9.935580	10.064420	10.128539	9.870561	30	42
19	45	9.827176	10.173824	9.935644	10.064356	10.128568	9.870532	15	41
20	5	9.827211	10.173789	9.935707	10.064293	10.128596	9.870504	55	40
21	15	9.827246	10.173754	9.935771	10.064229	10.128625	9.870475	45	39
22	30	9.827281	10.173719	9.935834	10.064166	10.128653	9.870447	30	38
23	45	9.827316	10.173684	9.935898	10.064102	10.128682	9.870418	15	37
24	6	9.827351	10.173649	9.935961	10.064039	10.128710	9.870390	54	36
25	15	9.827386	10.173614	9.936025	10.063975	10.128739	9.870361	45	35
26	30	9.827421	10.173579	9.936088	10.063912	10.128767	9.870333	30	34
27	45	9.827456	10.173544	9.936152	10.063848	10.128796	9.870304	15	33
28	7	9.827491	10.173509	9.936216	10.063785	10.128824	9.870276	53	32
29	15	9.827526	10.173474	9.936279	10.063721	10.128853	9.870247	45	31
30	30	9.827561	10.173439	9.936342	10.063658	10.128881	9.870218	30	30
31	45	9.827596	10.173404	9.936406	10.063594	10.128910	9.870190	15	29
32	8	9.827631	10.173369	9.936469	10.063531	10.128938	9.870161	52	28
33	15	9.827666	10.173334	9.936533	10.063467	10.128967	9.870133	45	27
34	30	9.827700	10.173300	9.936596	10.063404	10.128995	9.870104	30	26
35	45	9.827736	10.173265	9.936660	10.063340	10.129024	9.870076	15	25
36	9	9.827770	10.173230	9.936723	10.063277	10.129053	9.870047	51	24
37	15	9.827806	10.173195	9.936787	10.063213	10.129082	9.870018	45	23
38	30	9.827840	10.173160	9.936850	10.063150	10.130010	9.869990	30	22
39	45	9.827875	10.173125	9.936914	10.063086	10.130039	9.869961	15	21
40	10	9.827910	10.173090	9.936977	10.063023	10.130067	9.869933	50	20
41	15	9.827945	10.173055	9.937041	10.062959	10.130096	9.869904	45	19
42	30	9.827980	10.173020	9.937104	10.062896	10.130125	9.869875	30	18
43	45	9.828014	10.172986	9.937168	10.062832	10.130153	9.869847	15	17
44	11	9.828049	10.172951	9.937231	10.062769	10.130182	9.869818	49	16
45	15	9.828084	10.172916	9.937295	10.062705	10.130210	9.869790	45	15
46	30	9.828119	10.172881	9.937358	10.062642	10.130239	9.869761	30	14
47	45	9.828154	10.172846	9.937421	10.062579	10.130268	9.869732	15	13
48	12	9.828189	10.172811	9.937485	10.062515	10.130296	9.869704	48	12
49	15	9.828223	10.172777	9.937548	10.062452	10.130325	9.869675	45	11
50	30	9.828258	10.172742	9.937612	10.062388	10.130354	9.869646	30	10
51	45	9.828293	10.172707	9.937675	10.062325	10.130382	9.869618	15	9
52	13	9.828328	10.172672	9.937739	10.062261	10.130411	9.869589	47	8
53	15	9.828363	10.172637	9.937802	10.062198	10.130440	9.869560	45	7
54	30	9.828398	10.172602	9.937866	10.062134	10.130468	9.869532	30	6
55	45	9.828433	10.172568	9.937929	10.062071	10.130497	9.869503	15	5
56	14	9.828467	10.172533	9.937993	10.062007	10.130526	9.869474	46	4
57	15	9.828502	10.172498	9.938056	10.061944	10.130554	9.869446	45	3
58	30	9.828537	10.172463	9.938120	10.061880	10.130583	9.869417	30	2
59	45	9.828571	10.172429	9.938183	10.061817	10.130612	9.869388	15	1
60	15	9.828606	10.172394	9.938246	10.061754	10.130640	9.869359	45	0
sec.	"	sin.	coscant.	tan.	cotangent.	secant.	cscant.	"	sec.
49°.		LOG. SINES, &c.						47 deg.	

2° 49'.		LOG. SINES, &c. (L.)						42 deg.	
sec.	"	sin.	cos.	tan.	cot.	secant.	cosec.	"	sec.
0	15	9.827800	10.172304	9.958246	10.041754	10.130640	9.869360	45	60
1	15	9.827841	10.172359	9.958319	10.041690	10.130690	9.869331	45	59
2	30	9.827876	10.172324	9.958373	10.041627	10.130698	9.869302	45	58
3	45	9.827711	10.172289	9.958437	10.041563	10.130726	9.869274	15	57
4	16	9.827745	10.172255	9.958500	10.041500	10.130755	9.869245	44	56
5	15	9.827780	10.172220	9.958564	10.041436	10.130784	9.869216	45	55
6	30	9.827815	10.172185	9.958627	10.041373	10.130813	9.869187	30	54
7	45	9.827849	10.172151	9.958691	10.041309	10.130841	9.869159	45	53
8	17	9.827884	10.172116	9.958754	10.041246	10.130870	9.869130	43	52
9	15	9.827919	10.172081	9.958818	10.041182	10.130900	9.869101	45	51
10	30	9.827954	10.172046	9.958881	10.041119	10.130927	9.869073	30	50
11	45	9.827988	10.172012	9.958944	10.041056	10.130956	9.869044	15	49
12	18	9.828023	10.171977	9.959008	10.040993	10.130985	9.869015	42	48
13	15	9.828058	10.171942	9.959071	10.040929	10.131014	9.868986	45	47
14	30	9.828092	10.171908	9.959135	10.040865	10.131042	9.868958	45	46
15	45	9.828127	10.171873	9.959198	10.040802	10.131071	9.868929	15	45
16	19	9.828162	10.171838	9.959262	10.040738	10.131100	9.868900	41	44
17	15	9.828197	10.171803	9.959325	10.040675	10.131129	9.868871	45	43
18	30	9.828231	10.171769	9.959389	10.040611	10.131157	9.868843	30	42
19	45	9.828266	10.171734	9.959452	10.040548	10.131186	9.868814	45	41
20	20	9.828301	10.171699	9.959515	10.040484	10.131215	9.868785	40	40
21	15	9.828335	10.171665	9.959579	10.040421	10.131244	9.868756	45	39
22	30	9.828370	10.171630	9.959642	10.040358	10.131272	9.868728	30	38
23	45	9.828404	10.171596	9.959706	10.040294	10.131301	9.868699	45	37
24	21	9.828439	10.171561	9.959769	10.040231	10.131330	9.868670	39	36
25	15	9.828474	10.171526	9.959833	10.040167	10.131359	9.868641	45	35
26	30	9.828509	10.171491	9.959896	10.040104	10.131388	9.868612	30	34
27	45	9.828543	10.171457	9.959960	10.040040	10.131416	9.868584	15	33
28	22	9.828578	10.171422	9.960023	10.039977	10.131445	9.868555	38	32
29	15	9.828612	10.171388	9.960087	10.039914	10.131474	9.868526	45	31
30	30	9.828647	10.171353	9.960150	10.039850	10.131503	9.868497	30	30
31	45	9.828682	10.171318	9.960213	10.039787	10.131532	9.868468	15	29
32	23	9.828716	10.171284	9.960277	10.039723	10.131560	9.868440	37	28
33	15	9.828751	10.171249	9.960340	10.039660	10.131589	9.868411	45	27
34	30	9.828785	10.171215	9.960404	10.039596	10.131618	9.868382	30	26
35	45	9.828820	10.171180	9.960467	10.039533	10.131647	9.868353	15	25
36	24	9.828855	10.171145	9.960530	10.039470	10.131676	9.868324	36	24
37	15	9.828889	10.171111	9.960594	10.039406	10.131705	9.868295	45	23
38	30	9.828924	10.171076	9.960657	10.039343	10.131734	9.868266	30	22
39	45	9.828958	10.171042	9.960721	10.039279	10.131762	9.868237	15	21
40	25	9.828993	10.171007	9.960784	10.039216	10.131791	9.868208	35	20
41	15	9.829028	10.170972	9.960848	10.039152	10.131820	9.868179	45	19
42	30	9.829062	10.170938	9.960911	10.039089	10.131849	9.868151	30	18
43	45	9.829097	10.170903	9.960974	10.039026	10.131878	9.868122	15	17
44	26	9.829131	10.170869	9.961038	10.038962	10.131907	9.868093	34	16
45	15	9.829166	10.170834	9.961101	10.038899	10.131936	9.868064	45	15
46	30	9.829200	10.170800	9.961165	10.038835	10.131964	9.868036	30	14
47	45	9.829235	10.170765	9.961228	10.038772	10.131993	9.868007	15	13
48	27	9.829269	10.170731	9.961291	10.038709	10.132022	9.867978	33	12
49	15	9.829304	10.170696	9.961355	10.038645	10.132051	9.867949	45	11
50	30	9.829338	10.170662	9.961418	10.038582	10.132080	9.867920	30	10
51	45	9.829373	10.170627	9.961482	10.038518	10.132109	9.867891	15	9
52	28	9.829407	10.170593	9.961545	10.038455	10.132138	9.867862	32	8
53	15	9.829442	10.170558	9.961609	10.038391	10.132167	9.867833	45	7
54	30	9.829476	10.170524	9.961672	10.038328	10.132196	9.867804	30	6
55	45	9.829511	10.170489	9.961735	10.038265	10.132225	9.867775	15	5
56	29	9.829545	10.170455	9.961799	10.038201	10.132253	9.867747	31	4
57	15	9.829580	10.170420	9.961862	10.038138	10.132282	9.867718	45	3
58	30	9.829614	10.170386	9.961926	10.038074	10.132311	9.867689	30	2
59	45	9.829649	10.170351	9.961989	10.038011	10.132340	9.867660	15	1
60	30	9.829683	10.170317	9.962052	10.037948	10.132369	9.867631	30	0
sec.	"	cosine	secant.	sin.	tan.	cot.	secant.	sin.	sec.
3° 10'.		LOG. SINES, &c.						47 deg.	

2° 50'.		LOG. SINES, &c. (1.)						42 deg.	
sec.	min.	sine.	cosine.	tan.	cot.	secant.	cosec.	sec.	min.
0	30	9.829883	10.170317	9.962062	10.037938	10.132309	9.867631	30	60
1	15	9.829718	10.170282	9.962116	10.037884	10.132398	9.867602	45	45
2	30	9.829752	10.170248	9.962179	10.037821	10.132427	9.867573	15	30
3	45	9.829787	10.170213	9.962243	10.037757	10.132456	9.867544	15	15
4	31	9.829821	10.170179	9.962306	10.037694	10.132485	9.867515	29	56
5	15	9.829856	10.170144	9.962369	10.037631	10.132514	9.867486	45	45
6	30	9.829890	10.170110	9.962433	10.037567	10.132543	9.867457	30	30
7	15	9.829924	10.170076	9.962496	10.037504	10.132572	9.867428	15	15
8	32	9.829959	10.170041	9.962560	10.037440	10.132601	9.867399	28	52
9	15	9.829993	10.170007	9.962623	10.037377	10.132630	9.867370	45	45
10	30	9.830028	10.169972	9.962686	10.037314	10.132659	9.867341	30	30
11	45	9.830062	10.169938	9.962750	10.037250	10.132688	9.867312	15	15
12	33	9.830097	10.169903	9.962813	10.037187	10.132717	9.867283	27	48
13	15	9.830131	10.169869	9.962877	10.037123	10.132746	9.867254	45	45
14	30	9.830165	10.169835	9.962940	10.037060	10.132775	9.867225	30	30
15	45	9.830200	10.169800	9.963003	10.036997	10.132804	9.867196	15	15
16	34	9.830234	10.169766	9.963067	10.036933	10.132833	9.867167	26	44
17	15	9.830269	10.169731	9.963130	10.036870	10.132862	9.867138	45	45
18	30	9.830303	10.169697	9.963194	10.036806	10.132891	9.867109	30	30
19	45	9.830337	10.169663	9.963257	10.036743	10.132920	9.867080	15	15
20	35	9.830372	10.169628	9.963320	10.036680	10.132949	9.867051	25	40
21	15	9.830406	10.169594	9.963384	10.036616	10.132978	9.867022	45	45
22	30	9.830440	10.169560	9.963447	10.036553	10.133007	9.866993	30	30
23	45	9.830474	10.169525	9.963511	10.036489	10.133036	9.866964	15	15
24	36	9.830508	10.169491	9.963574	10.036426	10.133065	9.866935	24	36
25	15	9.830543	10.169457	9.963637	10.036363	10.133094	9.866906	45	45
26	30	9.830578	10.169423	9.963701	10.036299	10.133123	9.866877	30	30
27	45	9.830612	10.169388	9.963764	10.036236	10.133152	9.866848	15	15
28	37	9.830646	10.169354	9.963827	10.036173	10.133181	9.866819	23	32
29	15	9.830681	10.169319	9.963891	10.036109	10.133210	9.866790	45	45
30	30	9.830715	10.169285	9.963954	10.036046	10.133239	9.866761	30	30
31	45	9.830749	10.169251	9.964018	10.035982	10.133268	9.866732	15	15
32	38	9.830784	10.169216	9.964081	10.035919	10.133297	9.866703	22	28
33	15	9.830818	10.169182	9.964144	10.035856	10.133326	9.866674	45	45
34	30	9.830853	10.169148	9.964208	10.035793	10.133355	9.866645	30	30
35	45	9.830887	10.169113	9.964271	10.035729	10.133385	9.866616	15	15
36	39	9.830921	10.169079	9.964335	10.035665	10.133414	9.866586	21	24
37	15	9.830955	10.169045	9.964398	10.035602	10.133443	9.866557	45	45
38	30	9.830989	10.169011	9.964461	10.035539	10.133472	9.866528	30	30
39	45	9.831024	10.168976	9.964525	10.035475	10.133501	9.866499	15	15
40	40	9.831058	10.168942	9.964588	10.035412	10.133530	9.866470	20	20
41	15	9.831092	10.168908	9.964651	10.035349	10.133559	9.866441	45	45
42	30	9.831126	10.168874	9.964715	10.035285	10.133588	9.866412	30	30
43	45	9.831161	10.168839	9.964778	10.035222	10.133618	9.866383	15	15
44	41	9.831195	10.168805	9.964842	10.035158	10.133647	9.866353	19	16
45	15	9.831229	10.168771	9.964905	10.035095	10.133676	9.866324	45	45
46	30	9.831263	10.168737	9.964968	10.035032	10.133705	9.866295	30	30
47	45	9.831298	10.168702	9.965032	10.034968	10.133734	9.866266	15	15
48	42	9.831332	10.168668	9.965095	10.034905	10.133763	9.866237	18	11
49	15	9.831366	10.168634	9.965158	10.034842	10.133792	9.866208	45	45
50	30	9.831400	10.168600	9.965222	10.034778	10.133821	9.866179	30	30
51	45	9.831434	10.168566	9.965285	10.034715	10.133851	9.866149	15	15
52	43	9.831469	10.168531	9.965349	10.034651	10.133880	9.866120	17	8
53	15	9.831503	10.168497	9.965412	10.034588	10.133909	9.866091	45	45
54	30	9.831537	10.168463	9.965475	10.034525	10.133938	9.866062	30	30
55	45	9.831571	10.168429	9.965539	10.034461	10.133967	9.866033	15	15
56	44	9.831606	10.168394	9.965602	10.034398	10.133996	9.866004	16	11
57	15	9.831640	10.168360	9.965665	10.034335	10.134026	9.865974	45	45
58	30	9.831674	10.168326	9.965729	10.034271	10.134055	9.865945	30	30
59	45	9.831708	10.168292	9.965792	10.034208	10.134084	9.865916	15	15
60	45	9.831742	10.168258	9.965855	10.034145	10.134113	9.865887	15	0
sec.	min.	sine.	cosine.	tan.	cot.	secant.	cosec.	sec.	min.
2° 50'.		LOG. SINES, &c.						42 deg.	

2 ^d 51 ^m .		LOG. SINES, &c. (L)						42 deg.	
sec.	"	sin.	cosecant.	tangent.	cotangent.	secant.	cosec.	"	sec.
0	45	9.831742	10.168258	9.965855	10.034145	10.134113	9.865887	15	80
1	15	9.831776	10.168224	9.965919	10.034081	10.134142	9.865858	45	59
2	30	9.831811	10.168189	9.965982	10.034018	10.134172	9.865828	30	57
3	45	9.831845	10.168155	9.966045	10.033955	10.134201	9.865799	15	56
4	46	9.831879	10.168121	9.966109	10.033891	10.134230	9.865770	14	55
5	15	9.831913	10.168087	9.966172	10.033828	10.134259	9.865741	45	54
6	30	9.831947	10.168053	9.966236	10.033764	10.134288	9.865712	30	53
7	45	9.831981	10.168019	9.966299	10.033701	10.134318	9.865682	15	52
8	47	9.832015	10.167985	9.966362	10.033638	10.134347	9.865653	13	51
9	15	9.832050	10.167950	9.966426	10.033574	10.134376	9.865624	45	50
10	30	9.832084	10.167916	9.966489	10.033511	10.134405	9.865595	30	49
11	45	9.832118	10.167882	9.966552	10.033448	10.134435	9.865565	15	48
12	48	9.832152	10.167848	9.966616	10.033384	10.134464	9.865536	12	47
13	15	9.832186	10.167814	9.966679	10.033321	10.134493	9.865507	45	46
14	30	9.832220	10.167780	9.966742	10.033258	10.134522	9.865478	30	45
15	45	9.832254	10.167746	9.966806	10.033194	10.134552	9.865448	15	44
16	49	9.832288	10.167712	9.966869	10.033131	10.134581	9.865419	11	43
17	15	9.832322	10.167678	9.966932	10.033068	10.134610	9.865390	45	42
18	30	9.832356	10.167644	9.966996	10.033004	10.134639	9.865361	30	41
19	45	9.832390	10.167609	9.967059	10.032941	10.134669	9.865331	15	40
20	50	9.832425	10.167575	9.967122	10.032878	10.134698	9.865302	10	39
21	15	9.832459	10.167541	9.967186	10.032814	10.134727	9.865273	45	38
22	30	9.832493	10.167507	9.967249	10.032751	10.134757	9.865243	30	37
23	45	9.832527	10.167473	9.967313	10.032687	10.134786	9.865214	15	36
24	51	9.832561	10.167439	9.967376	10.032624	III. IIIIIII	9.865185	11	35
25	15	9.832595	10.167405	9.967439	10.032561	IV. 134844	9.865156	45	34
26	30	9.832629	10.167371	9.967503	10.032497	10.134874	9.865126	30	33
27	45	9.832663	10.167337	9.967566	10.032434	10.134903	9.865097	15	32
28	52	9.832697	10.167303	9.967629	10.032371	10.134932	9.865068	8	31
29	15	9.832731	10.167269	9.967693	10.032307	10.134962	9.865038	45	30
30	30	9.832765	10.167235	9.967756	10.032244	10.134991	9.865009	30	29
31	45	9.832799	10.167201	9.967819	10.032181	10.135020	9.864980	15	28
32	53	9.832833	10.167167	9.967883	10.032117	10.135050	9.864950	7	27
33	15	9.832867	10.167133	9.967946	10.032054	10.135079	9.864921	45	26
34	30	9.832901	10.167099	9.968009	10.031991	10.135108	9.864892	30	25
35	45	9.832935	10.167065	9.968073	10.031927	III. 135138	9.864862	15	24
36	54	9.832969	10.167031	9.968136	10.031864	10.135167	9.864833	6	23
37	15	9.833003	10.166997	9.968199	10.031801	IV. 135196	9.864804	45	22
38	30	9.833037	10.166963	9.968263	10.031737	10.135226	9.864774	30	21
39	45	9.833071	10.166929	9.968326	10.031674	10.135255	9.864745	15	20
40	55	9.833105	10.166895	9.968389	10.031611	IV. 135284	9.864716	5	19
41	15	9.833139	10.166861	9.968453	10.031547	10.135314	9.864686	45	18
42	30	9.833173	10.166827	9.968516	10.031484	10.135343	9.864657	30	17
43	45	9.833207	10.166793	9.968579	10.031421	10.135373	9.864627	15	16
44	56	9.833241	10.166759	9.968643	10.031357	10.135402	9.864598	4	15
45	15	9.833275	10.166725	9.968706	10.031294	10.135431	9.864569	45	14
46	30	9.833309	10.166691	9.968769	10.031231	III. 135461	9.864539	30	13
47	45	9.833343	10.166657	9.968833	10.031167	10.135490	9.864510	15	12
48	57	9.833377	10.166623	9.968896	10.031104	10.135519	9.864481	3	11
49	15	9.833410	10.166589	9.968959	10.031041	10.135549	9.864451	45	10
50	30	9.833444	10.166556	9.969023	10.030977	10.135578	9.864422	30	9
51	45	9.833478	10.166522	9.969086	10.030914	10.135608	9.864392	15	8
52	58	9.833512	10.166488	9.969149	10.030851	10.135637	9.864363	2	7
53	15	9.833546	10.166454	9.969213	10.030787	10.135667	9.864333	45	6
54	30	9.833580	10.166420	9.969276	10.030724	10.135696	9.864304	30	5
55	45	9.833614	10.166386	9.969339	10.030661	10.135725	9.864275	15	4
56	59	9.833648	10.166352	9.969403	10.030597	10.135755	9.864245	1	3
57	15	9.833682	10.166318	9.969466	10.030534	10.135784	9.864216	45	2
58	30	9.833716	10.166284	9.969529	10.030471	10.135814	9.864186	30	1
59	45	9.833749	10.166251	9.969592	10.030408	10.135843	9.864157	15	0
60	60	9.833783	10.166217	9.969656	10.030344	10.135873	9.864127	0	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	cos.
3 ^d 8 ^m .		LOG. SINES, &c.						47 deg.	

2° 52'.		LOG. SINES, &c. (1.)						43 deg.	
sec.	min.	sine.	secant.	tangent.	cotangent.	secant.	cosine.	sec.	min.
0	0	9.833783	10.166217	9.969656	10.030344	10.135873	9.864127	60	60
1	15	9.833817	10.166183	9.969719	10.030281	10.135851	9.864098	45	59
2	30	9.833851	10.166149	9.969782	10.030218	10.135829	9.864069	30	58
3	45	9.833885	10.166115	9.969846	10.030154	10.135807	9.864039	15	57
4	1	9.833919	10.166081	9.969909	10.030091	10.135785	9.864010	59	56
5	15	9.833953	10.166047	9.969972	10.030028	10.135763	9.863980	45	55
6	30	9.833986	10.166014	9.970036	10.029964	10.135741	9.863951	30	54
7	45	9.834020	10.165980	9.970099	10.029901	10.135719	9.863921	15	53
8	2	9.834054	10.165946	9.970162	10.029838	10.135697	9.863892	58	52
9	15	9.834088	10.165912	9.970225	10.029774	10.135675	9.863862	45	51
10	30	9.834122	10.165878	9.970289	10.029711	10.135653	9.863833	30	50
11	45	9.834156	10.165844	9.970352	10.029648	10.135631	9.863803	15	49
12	3	9.834189	10.165811	9.970416	10.029584	10.135609	9.863774	57	48
13	15	9.834223	10.165777	9.970479	10.029521	10.135587	9.863744	45	47
14	30	9.834257	10.165743	9.970542	10.029458	10.135565	9.863715	30	46
15	45	9.834291	10.165709	9.970606	10.029394	10.135543	9.863685	15	45
16	4	9.834325	10.165675	9.970669	10.029331	10.135521	9.863656	56	44
17	15	9.834358	10.165642	9.970732	10.029268	10.135499	9.863626	45	43
18	30	9.834392	10.165608	9.970795	10.029205	10.135477	9.863597	30	42
19	45	9.834426	10.165574	9.970859	10.029141	10.135455	9.863567	15	41
20	5	9.834460	10.165540	9.970922	10.029078	10.135433	9.863538	55	40
21	15	9.834493	10.165507	9.970985	10.029015	10.135411	9.863508	45	39
22	30	9.834527	10.165473	9.971049	10.028951	10.135389	9.863478	30	38
23	45	9.834561	10.165439	9.971112	10.028888	10.135367	9.863449	15	37
24	6	9.834595	10.165405	9.971176	10.028825	10.135345	9.863419	54	36
25	15	9.834628	10.165372	9.971239	10.028761	10.135323	9.863390	45	35
26	30	9.834662	10.165338	9.971302	10.028698	10.135301	9.863360	30	34
27	45	9.834696	10.165304	9.971365	10.028635	10.135279	9.863331	15	33
28	7	9.834730	10.165270	9.971429	10.028571	10.135257	9.863301	53	32
29	15	9.834763	10.165237	9.971492	10.028508	10.135235	9.863272	45	31
30	30	9.834797	10.165203	9.971555	10.028444	10.135213	9.863242	30	30
31	45	9.834831	10.165169	9.971618	10.028382	10.135191	9.863212	15	29
32	8	9.834865	10.165136	9.971682	10.028318	10.135169	9.863183	52	28
33	15	9.834898	10.165102	9.971745	10.028255	10.135147	9.863153	45	27
34	30	9.834932	10.165068	9.971809	10.028192	10.135125	9.863124	30	26
35	45	9.834966	10.165034	9.971872	10.028129	10.135103	9.863094	15	25
36	9	9.834999	10.165001	9.971936	10.028065	10.135081	9.863064	51	24
37	15	9.835033	10.164967	9.971999	10.028002	10.135059	9.863035	45	23
38	30	9.835067	10.164933	9.972062	10.027939	10.135037	9.863005	30	22
39	45	9.835100	10.164900	9.972126	10.027875	10.135015	9.862976	15	21
40	10	9.835134	10.164866	9.972189	10.027812	10.134993	9.862946	50	20
41	15	9.835168	10.164832	9.972253	10.027749	10.134971	9.862916	45	19
42	30	9.835201	10.164799	9.972316	10.027685	10.134949	9.862887	30	18
43	45	9.835235	10.164765	9.972379	10.027622	10.134927	9.862857	15	17
44	11	9.835269	10.164731	9.972442	10.027559	10.134905	9.862827	49	16
45	15	9.835302	10.164698	9.972505	10.027495	10.134883	9.862798	45	15
46	30	9.835336	10.164664	9.972568	10.027432	10.134861	9.862768	30	14
47	45	9.835370	10.164630	9.972631	10.027369	10.134839	9.862738	15	13
48	12	9.835403	10.164597	9.972694	10.027306	10.134817	9.862709	48	12
49	15	9.835437	10.164563	9.972758	10.027242	10.134795	9.862679	45	11
50	30	9.835471	10.164529	9.972821	10.027179	10.134773	9.862649	30	10
51	45	9.835504	10.164496	9.972884	10.027116	10.134751	9.862620	15	9
52	13	9.835538	10.164462	9.972948	10.027052	10.134729	9.862590	47	8
53	15	9.835571	10.164429	9.973011	10.026989	10.134707	9.862560	45	7
54	30	9.835605	10.164395	9.973074	10.026926	10.134685	9.862531	30	6
55	45	9.835639	10.164361	9.973137	10.026863	10.134663	9.862501	15	5
56	14	9.835672	10.164328	9.973201	10.026799	10.134641	9.862471	46	4
57	15	9.835706	10.164294	9.973264	10.026736	10.134619	9.862442	45	3
58	30	9.835739	10.164261	9.973327	10.026673	10.134597	9.862412	30	2
59	45	9.835773	10.164227	9.973391	10.026609	10.134575	9.862382	15	1
60	15	9.835807	10.164193	9.973454	10.026546	10.134553	9.862353	45	0
sec.	min.	sine.	secant.	tangent.	cotangent.	secant.	sine.	sec.	min.
2° 7'.		LOG. SINES, &c.						46 deg.	

2 ^h 53 ^m .		LOG. SINES, &c. (t.)						48 deg.	
sec.	"	sine.	coscant.	tangent.	cotangent.	secant.	cosec.	"	"
0	15	9.835807	10.164193	9.973454	10.026546	10.137647	9.862353		4
1	15	9.835840	10.164160	9.973517	10.026483	10.137677	9.862323	45	
2	30	9.835874	10.164126	9.973580	10.026420	10.137707	9.862293	30	
3	45	9.835907	10.164093	9.973644	10.026358	10.137737	9.862263	15	
4	16	9.835941	10.164060	9.973707	10.026293	10.137766	9.862234		4
5	15	9.835974	10.164026	9.973770	10.026230	10.137796	9.862204	45	
6	30	9.836008	10.163992	9.973834	10.026168	10.137826	9.862174	30	
7	45	9.836041	10.163959	9.973897	10.026103	10.137855	9.862145	15	
8	17	9.836075	10.163925	9.973960	10.026040	10.137885	9.862115		4
9	15	9.836108	10.163892	9.974023	10.025977	10.137915	9.862085	45	
10	30	9.836142	10.163858	9.974087	10.025913	10.137945	9.862055	30	
11	45	9.836176	10.163824	9.974150	10.025850	10.137974	9.862026	15	
12	18	9.836209	10.163791	9.974213	10.025787	10.138004	9.861996		4
13	15	9.836243	10.163757	9.974277	10.025723	10.138034	9.861966	45	
14	30	9.836276	10.163724	9.974340	10.025660	10.138064	9.861936	30	
15	45	9.836310	10.163690	9.974403	10.025597	10.138094	9.861906	15	
16	19	9.836343	10.163657	9.974466	10.025534	10.138123	9.861877		4
17	15	9.836377	10.163623	9.974530	10.025470	10.138153	9.861847	45	
18	30	9.836410	10.163590	9.974593	10.025407	10.138183	9.861817	30	
19	45	9.836444	10.163556	9.974656	10.025344	10.138213	9.861787	15	
20	20	9.836477	10.163523	9.974719	10.025281	10.138242	9.861758		4
21	15	9.836510	10.163490	9.974783	10.025217	10.138272	9.861728	45	
22	30	9.836544	10.163456	9.974846	10.025154	10.138302	9.861698	30	
23	45	9.836577	10.163423	9.974909	10.025091	10.138332	9.861668	15	
24	21	9.836611	10.163389	9.974973	10.025027	10.138362	9.861638		3
25	15	9.836644	10.163356	9.975036	10.024964	10.138392	9.861608	45	
26	30	9.836678	10.163322	9.975099	10.024901	10.138421	9.861579	30	
27	45	9.836711	10.163289	9.975162	10.024838	10.138451	9.861549	15	
28	22	9.836745	10.163255	9.975226	10.024774	10.138481	9.861519		3
29	15	9.836778	10.163222	9.975289	10.024711	10.138511	9.861489	45	
30	30	9.836812	10.163188	9.975352	10.024648	10.138541	9.861459	30	
31	45	9.836845	10.163155	9.975415	10.024585	10.138571	9.861429	15	
32	23	9.836878	10.163122	9.975479	10.024521	10.138600	9.861400		3
33	15	9.836912	10.163088	9.975542	10.024458	10.138630	9.861370	45	
34	30	9.836945	10.163055	9.975605	10.024395	10.138660	9.861340	30	
35	45	9.836979	10.163021	9.975668	10.024332	10.138690	9.861310	15	
36	24	9.837012	10.162988	9.975732	10.024268	10.138720	9.861280		3
37	15	9.837045	10.162955	9.975795	10.024205	10.138750	9.861250	45	
38	30	9.837079	10.162921	9.975858	10.024142	10.138780	9.861220	30	
39	45	9.837112	10.162888	9.975922	10.024078	10.138809	9.861191	15	
40	25	9.837146	10.162854	9.975985	10.024015	10.138839	9.861161		3
41	15	9.837179	10.162821	9.976048	10.023952	10.138869	9.861131	45	
42	30	9.837212	10.162788	9.976111	10.023889	10.138899	9.861101	30	
43	45	9.837246	10.162754	9.976175	10.023825	10.138929	9.861071	15	
44	26	9.837279	10.162721	9.976238	10.023762	10.138959	9.861041		3
45	15	9.837312	10.162688	9.976301	10.023699	10.138989	9.861011	45	
46	30	9.837346	10.162654	9.976364	10.023636	10.139019	9.860981	30	
47	45	9.837379	10.162621	9.976428	10.023572	10.139049	9.860951	15	
48	27	9.837412	10.162588	9.976491	10.023509	10.139079	9.860921		33
49	15	9.837446	10.162554	9.976554	10.023446	10.139108	9.860892	45	
50	30	9.837479	10.162521	9.976617	10.023383	10.139138	9.860862	30	
51	45	9.837512	10.162488	9.976681	10.023319	10.139168	9.860832	15	
52	28	9.837546	10.162454	9.976744	10.023256	10.139198	9.860802		32
53	15	9.837579	10.162421	9.976807	10.023193	10.139228	9.860772	45	
54	30	9.837612	10.162388	9.976870	10.023130	10.139258	9.860742	30	
55	45	9.837646	10.162354	9.976934	10.023066	10.139288	9.860712	15	
56	29	9.837679	10.162321	9.976997	10.023003	10.139318	9.860682		31
57	15	9.837712	10.162288	9.977060	10.022940	10.139348	9.860652	45	
58	30	9.837746	10.162254	9.977123	10.022877	10.139378	9.860622	30	
59	45	9.837779	10.162221	9.977187	10.022813	10.139408	9.860592	15	
60	30	9.837812	10.162188	9.977250	10.022750	10.139438	9.860562		3
sec.	"	sine.	coscant.	cotangent.	tangent.	secant.	sine.	"	"
3 ^h 6 ^m .		LOG. SINES, &c.						46 deg.	

2 ^d 54 ^m .		LOG. SINES, &c. (t.)					43 deg.		
		sine.	cosecant.	tangent.	cotangent.	secant.	cosine.		sec.
	30	9.837812	10.162188	9.977250	10.022750	10.139438	9.800562	30	60
	15	9.837845	10.162155	9.977313	10.022687	10.139468	9.860532	45	59
	30	9.837879	10.162121	9.977376	10.022624	10.139498	9.860502	30	58
	45	9.837912	10.162088	9.977440	10.022560	10.139528	9.860472	15	57
	31	9.837945	10.162055	9.977503	10.022497	10.139558	9.860442	29	56
	15	9.837978	10.162022	9.977566	10.022434	10.139588	9.860412	45	55
	30	9.838012	10.161988	9.977629	10.022371	10.139618	9.860382	30	54
	45	9.838045	10.161955	9.977693	10.022307	10.139648	9.860352	15	53
	32	9.838078	10.161922	9.977756	10.022244	10.139678	9.860322	28	52
	15	9.838111	10.161889	9.977819	10.022181	10.139708	9.860292	45	51
	30	9.838145	10.161855	9.977882	10.022118	10.139738	9.860262	30	50
	45	9.838178	10.161822	9.977946	10.022054	10.139768	9.860232	15	49
	33	9.838211	10.161789	9.978009	10.021991	10.139798	9.860202	27	48
	15	9.838244	10.161756	9.978072	10.021928	10.139828	9.860172	45	47
	30	9.838278	10.161722	9.978135	10.021865	10.139858	9.860142	30	46
	45	9.838311	10.161689	9.978199	10.021801	10.139888	9.860112	15	45
	34	9.838344	10.161656	9.978262	10.021738	10.139918	9.860082	26	44
	15	9.838377	10.161623	9.978325	10.021675	10.139948	9.860052	45	43
	30	9.838410	10.161590	9.978388	10.021612	10.139978	9.860022	30	42
	45	9.838444	10.161556	9.978452	10.021548	10.140008	9.859992	15	41
	35	9.838477	10.161523	9.978515	10.021485	10.140038	9.859962	25	40
	15	9.838510	10.161490	9.978578	10.021422	10.140068	9.859932	45	39
	30	9.838543	10.161457	9.978641	10.021359	10.140098	9.859902	30	38
	45	9.838576	10.161424	9.978705	10.021295	10.140128	9.859872	15	37
	36	9.838610	10.161390	9.978768	10.021232	10.140158	9.859842	24	36
	15	9.838643	10.161357	9.978831	10.021169	10.140188	9.859812	45	35
	30	9.838676	10.161324	9.978894	10.021106	10.140219	9.859781	30	34
	45	9.838709	10.161291	9.978958	10.021042	10.140249	9.859751	15	33
	37	9.838742	10.161258	9.979021	10.020979	10.140279	9.859721	23	32
	15	9.838775	10.161225	9.979084	10.020916	10.140309	9.859691	45	31
	30	9.838808	10.161192	9.979147	10.020853	10.140339	9.859661	30	30
	45	9.838842	10.161158	9.979211	10.020789	10.140369	9.859631	15	29
	38	9.838875	10.161125	9.979274	10.020726	10.140399	9.859601	22	28
	15	9.838908	10.161092	9.979337	10.020663	10.140429	9.859571	45	27
	30	9.838941	10.161059	9.979400	10.020600	10.140459	9.859541	30	26
	45	9.838974	10.161026	9.979463	10.020537	10.140490	9.859510	15	25
	39	9.839007	10.160993	9.979527	10.020473	10.140520	9.859480	21	24
	15	9.839040	10.160960	9.979590	10.020410	10.140550	9.859450	45	23
	30	9.839073	10.160927	9.979653	10.020347	10.140580	9.859420	30	22
	45	9.839106	10.160894	9.979716	10.020284	10.140610	9.859390	15	21
	40	9.839140	10.160860	9.979780	10.020220	10.140640	9.859360	20	20
	15	9.839173	10.160827	9.979843	10.020157	10.140670	9.859330	45	19
	30	9.839206	10.160794	9.979906	10.020094	10.140700	9.859300	30	18
	45	9.839239	10.160761	9.979969	10.020031	10.140731	9.859269	15	17
	41	9.839272	10.160728	9.980033	10.019967	10.140761	9.859239	19	16
	15	9.839305	10.160695	9.980096	10.019904	10.140791	9.859209	45	15
	30	9.839338	10.160662	9.980159	10.019841	10.140821	9.859179	30	14
	45	9.839371	10.160629	9.980222	10.019778	10.140851	9.859149	15	13
	42	9.839404	10.160596	9.980286	10.019714	10.140881	9.859119	18	12
	15	9.839437	10.160563	9.980349	10.019651	10.140912	9.859088	45	11
	30	9.839470	10.160530	9.980412	10.019588	10.140942	9.859058	30	10
	45	9.839503	10.160497	9.980475	10.019525	10.140972	9.859028	15	9
	43	9.839536	10.160464	9.980538	10.019462	10.141002	9.858998	17	8
	15	9.839569	10.160431	9.980602	10.019398	10.141032	9.858968	45	7
	30	9.839602	10.160398	9.980665	10.019335	10.141063	9.858937	30	6
	45	9.839635	10.160365	9.980728	10.019272	10.141093	9.858907	15	5
	44	9.839668	10.160332	9.980791	10.019209	10.141123	9.858877	16	4
	15	9.839701	10.160299	9.980855	10.019145	10.141153	9.858847	45	3
	30	9.839734	10.160266	9.980918	10.019082	10.141184	9.858816	30	2
	45	9.839767	10.160233	9.980981	10.019019	10.141214	9.858786	15	1
	45	9.839800	10.160200	9.981044	10.018956	10.141244	9.858756	15	0
		cosine.	secant.	cotangent.	tangent.	cosecant.	sine.		sec.
3 ^d 5 ^m .		LOG. SINES, &c.					46 deg.		

55°.		LOG. SINES, &c. (L.)						48 deg.	
deg.	"	sine.	coscant.	tangent.	cotangent.	secant.	cosine.	"	
0	45	9.839900	11.180200	9.981044	10.018956	10.141244	9.858756	15	
1	15	9.839833	10.160167	9.981107	10.018893	10.141274	9.858726	45	
2	30	9.839866	10.160134	9.981171	10.018829	10.141304	9.858696	30	
3	45	9.839899	10.160101	9.981234	10.018766	10.141335	9.858665	15	
4	46	9.839932	10.160068	9.981297	10.018703	11.141365	9.858635	14	
5	15	9.839965	10.160035	9.981360	10.018640	10.141395	9.858605	45	
6	30	9.839998	10.160002	9.981424	10.018576	11.141425	9.858575	30	
7	45	9.840031	10.159969	9.981487	10.018513	10.141456	9.858544	15	
8	47	9.840064	10.159936	9.981550	10.018450	10.141486	9.858514	13	
9	15	9.840097	10.159903	9.981613	10.018387	10.141516	9.858484	45	
10	30	9.840130	10.159870	9.981677	10.018323	10.141547	9.858453	30	
11	45	9.840163	10.159837	9.981740	10.018260	10.141577	9.858423	15	
12	48	9.840196	10.159804	9.981803	10.018197	10.141607	9.858393	12	
13	15	9.840229	10.159771	9.981866	10.018134	10.141637	9.858363	45	
14	30	9.840262	10.159738	9.981929	10.018071	10.141668	9.858332	30	
15	45	9.840295	10.159705	9.981993	10.018007	10.141698	9.858302	15	
16	49	9.840328	10.159672	9.982056	10.017944	10.141728	9.858272	11	
17	15	9.840361	10.159639	9.982119	10.017881	10.141759	9.858241	45	
18	30	9.840393	10.159607	9.982182	10.017818	10.141789	9.858211	30	
19	45	9.840426	10.159574	9.982245	10.017755	10.141819	9.858181	15	
20	50	9.840459	10.159541	9.982309	10.017691	10.141850	9.858150	10	
21	15	9.840492	10.159508	9.982372	10.017628	10.141880	9.858120	45	
22	30	9.840525	10.159475	9.982435	10.017565	10.141910	9.858090	30	
23	45	9.840558	10.159442	9.982498	10.017502	10.141941	9.858059	15	
24	51	9.840591	10.159409	9.982562	10.017438	10.141971	9.858029	9	
25	15	9.840624	10.159376	9.982625	10.017375	10.142001	9.857999	45	
26	30	9.840656	10.159344	9.982688	10.017312	10.142032	9.857968	30	
27	45	9.840689	10.159311	9.982751	10.017249	10.142062	9.857938	15	
28	52	9.840722	10.159278	9.982814	10.017186	10.142092	9.857908	8	
29	15	9.840755	10.159245	9.982878	10.017122	10.142123	9.857877	45	
30	30	9.840788	10.159212	9.982941	10.017059	10.142153	9.857847	30	
31	45	9.840821	10.159179	9.983004	10.016996	10.142183	9.857817	15	
32	53	9.840854	10.159146	9.983067	10.016933	10.142214	9.857786	7	
33	15	9.840886	10.159114	9.983131	10.016869	11.142244	9.857756	45	
34	30	9.840919	10.159081	9.983194	10.016806	10.142274	9.857726	30	
35	45	9.840952	10.159048	9.983257	10.016743	10.142305	9.857695	15	
36	54	9.840985	10.159015	9.983320	10.016680	10.142335	9.857665	6	
37	15	9.841018	10.158982	9.983383	10.016617	10.142366	9.857634	45	
38	30	9.841051	10.158949	9.983447	10.016553	10.142396	9.857604	30	
39	45	9.841083	10.158917	9.983510	10.016490	10.142426	9.857574	15	
40	55	9.841116	10.158884	9.983573	10.016427	10.142457	9.857543	5	
41	15	9.841149	10.158851	9.983636	10.016364	10.142487	9.857513	45	
42	30	9.841182	10.158818	9.983699	10.016301	10.142518	9.857482	30	
43	45	9.841215	10.158785	9.983763	10.016237	10.142548	9.857452	15	
44	56	9.841247	10.158753	9.983826	10.016174	10.142579	9.857421	4	
45	15	9.841280	10.158720	9.983889	10.016111	10.142609	9.857391	45	
46	30	9.841313	10.158687	9.983952	10.016048	10.142639	9.857361	30	
47	45	9.841346	10.158654	9.984015	10.015985	10.142670	9.857330	15	
48	57	9.841378	10.158622	9.984079	10.015921	10.142700	9.857300	3	
49	15	9.841411	10.158589	9.984142	10.015858	10.142731	9.857269	45	
50	30	9.841444	10.158556	9.984205	10.015795	10.142761	9.857239	30	
51	45	9.841477	10.158523	9.984268	10.015732	10.142792	9.857208	15	
52	58	9.841509	10.158491	9.984331	10.015669	10.142822	9.857178	2	
53	15	9.841542	10.158458	9.984395	10.015605	10.142853	9.857147	45	
54	30	9.841575	10.158425	9.984458	10.015542	10.142883	9.857117	30	
55	45	9.841608	10.158392	9.984521	10.015479	10.142914	9.857086	15	
56	59	9.841640	10.158360	9.984584	10.015416	10.142944	9.857056	1	
57	15	9.841673	10.158327	9.984648	10.015352	10.142974	9.857026	45	
58	30	9.841706	10.158294	9.984711	10.015289	10.143005	9.856995	30	
59	45	9.841739	10.158261	9.984774	10.015226	10.143035	9.856965	15	
60	60	9.841771	10.158229	9.984837	10.015163	10.143066	9.856934	0	
deg.	"	cosine.	secant.	cotangent.	tangent.	coscant.	sine.	"	
54°.		LOG. SINES, &c.						46 deg.	

3° 56'		LOG. SINES, &c. (t.)						44 deg.	
sec.		sine.	coscant.	tangent.	cotangent.	secant.	cosec.		sec.
0	0	9.841771	10.158229	9.984837	10.015163	10.143066	9.856934	60	60
1	15	9.841784	10.158216	9.984900	10.015100	10.143096	9.856904	59	59
2	30	9.841837	10.158163	9.984964	10.015036	10.143127	9.856873	30	30
3	45	9.841869	10.158131	9.985027	10.014973	10.143157	9.856843	15	15
4	1	9.841902	10.158098	9.985090	10.014910	10.143188	9.856812	59	50
5	15	9.841935	10.158065	9.985153	10.014847	10.143219	9.856781	45	45
6	30	9.841967	10.158032	9.985216	10.014784	10.143249	9.856751	30	30
7	45	9.842000	10.158000	9.985280	10.014720	10.143280	9.856720	15	63
8	2	9.842033	10.157967	9.985343	10.014657	10.143310	9.856690	58	52
9	15	9.842065	10.157935	9.985406	10.014594	10.143341	9.856659	45	61
10	30	9.842098	10.157902	9.985469	10.014531	10.143370	9.856630	30	30
11	45	9.842131	10.157869	9.985532	10.014468	10.143402	9.856598	15	49
12	3	9.842163	10.157837	9.985596	10.014404	10.143432	9.856568	57	48
13	15	9.842196	10.157804	9.985659	10.014341	10.143463	9.856537	45	47
14	30	9.842229	10.157771	9.985722	10.014278	10.143493	9.856507	30	46
15	45	9.842261	10.157739	9.985785	10.014215	10.143524	9.856476	15	45
16	4	9.842294	10.157706	9.985848	10.014152	10.143555	9.856445	56	44
17	15	9.842327	10.157673	9.985912	10.014089	10.143585	9.856415	45	43
18	30	9.842359	10.157641	9.985975	10.014025	10.143616	9.856385	30	42
19	45	9.842392	10.157608	9.986038	10.013962	10.143646	9.856354	15	41
20	5	9.842424	10.157576	9.986101	10.013899	10.143677	9.856323	55	40
21	15	9.842457	10.157543	9.986164	10.013836	10.143707	9.856293	45	39
22	30	9.842490	10.157510	9.986228	10.013772	10.143738	9.856262	30	38
23	45	9.842522	10.157478	9.986291	10.013709	10.143769	9.856231	15	37
24	6	9.842555	10.157445	9.986354	10.013646	10.143799	9.856201	54	36
25	15	9.842587	10.157413	9.986417	10.013583	10.143830	9.856170	45	35
26	30	9.842620	10.157380	9.986480	10.013520	10.143860	9.856140	30	34
27	45	9.842653	10.157347	9.986544	10.013456	10.143891	9.856110	15	33
28	7	9.842685	10.157315	9.986607	10.013393	10.143922	9.856078	53	32
29	15	9.842718	10.157282	9.986671	10.013330	10.143952	9.856048	45	31
30	30	9.842750	10.157250	9.986733	10.013267	10.143983	9.856017	30	30
31	45	9.842783	10.157217	9.986796	10.013204	10.144014	9.855986	15	29
32	8	9.842815	10.157185	9.986860	10.013140	10.144044	9.855956	52	28
33	15	9.842848	10.157152	9.986923	10.013077	10.144075	9.855925	45	27
34	30	9.842880	10.157120	9.986986	10.013014	10.144106	9.855895	30	26
35	45	9.842913	10.157087	9.987049	10.012951	10.144136	9.855864	15	25
36	9	9.842946	10.157054	9.987112	10.012888	10.144167	9.855833	51	24
37	15	9.842978	10.157022	9.987175	10.012825	10.144197	9.855803	45	23
38	30	9.843011	10.156989	9.987239	10.012761	10.144228	9.855772	30	22
39	45	9.843043	10.156957	9.987302	10.012698	10.144259	9.855741	15	21
40	10	9.843076	10.156924	9.987365	10.012635	10.144289	9.855711	50	20
41	15	9.843108	10.156892	9.987428	10.012572	10.144320	9.855680	45	19
42	30	9.843141	10.156859	9.987491	10.012509	10.144351	9.855650	30	18
43	45	9.843173	10.156827	9.987555	10.012445	10.144382	9.855618	15	17
44	11	9.843206	10.156794	9.987618	10.012382	10.144412	9.855588	49	16
45	15	9.843238	10.156762	9.987681	10.012319	10.144443	9.855557	45	15
46	30	9.843271	10.156729	9.987744	10.012256	10.144474	9.855526	30	14
47	45	9.843303	10.156697	9.987807	10.012193	10.144504	9.855496	15	13
48	12	9.843336	10.156664	9.987871	10.012129	10.144535	9.855465	48	12
49	15	9.843368	10.156632	9.987934	10.012066	10.144566	9.855434	45	11
50	30	9.843401	10.156599	9.987997	10.012003	10.144596	9.855404	30	10
51	45	9.843433	10.156567	9.988060	10.011940	10.144627	9.855373	15	9
52	13	9.843466	10.156535	9.988123	10.011877	10.144658	9.855342	47	8
53	15	9.843498	10.156503	9.988187	10.011813	10.144689	9.855311	45	7
54	30	9.843530	10.156470	9.988250	10.011750	10.144719	9.855281	30	6
55	45	9.843563	10.156437	9.988313	10.011687	10.144750	9.855250	15	5
56	14	9.843596	10.156405	9.988376	10.011624	10.144781	9.855219	46	4
57	15	9.843628	10.156372	9.988439	10.011561	10.144812	9.855188	45	3
58	30	9.843660	10.156340	9.988502	10.011498	10.144842	9.855158	30	2
59	45	9.843693	10.156307	9.988566	10.011434	10.144873	9.855127	15	1
60	15	9.843726	10.156275	9.988629	10.011371	10.144904	9.855096	45	0
sec.		sine.	coscant.	tangent.	cotangent.	secant.	cosec.		sec.
3° 57'		LOG. SINES, &c.						45 deg.	

2 ^d 57 ^m .		LOG. SINES, &c. (t.)						44 deg.
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"
0	15	9.843725	10.156275	9.988629	10.011371	10.144904	9.855096	45
1	15	9.843757	10.156243	9.988692	10.011308	10.144935	9.855065	45
2	30	9.843790	10.156210	9.988755	10.011245	10.144965	9.855035	30
3	45	9.843822	10.156178	9.988818	10.011182	10.144996	9.855004	15
4	16	9.843855	10.156145	9.988882	10.011118	10.145027	9.854973	44
5	15	9.843887	10.156113	9.988945	10.011055	10.145058	9.854942	45
6	30	9.843919	10.156081	9.989008	10.010992	10.145089	9.854911	30
7	45	9.843952	10.156048	9.989071	10.010929	10.145119	9.854881	15
8	17	9.843984	10.156016	9.989134	10.010866	10.145150	9.854850	43
9	15	9.844017	10.155983	9.989198	10.010802	10.145181	9.854819	45
10	30	9.844049	10.155951	9.989261	10.010739	10.145212	9.854788	30
11	45	9.844081	10.155919	9.989324	10.010676	10.145243	9.854757	15
12	18	9.844114	10.155886	9.989387	10.010613	10.145273	9.854727	42
13	15	9.844146	10.155854	9.989450	10.010550	10.145304	9.854696	45
14	30	9.844178	10.155822	9.989513	10.010487	10.145335	9.854665	30
15	45	9.844211	10.155789	9.989577	10.010423	10.145366	9.854634	15
16	19	9.844243	10.155757	9.989640	10.010360	10.145397	9.854603	41
17	15	9.844275	10.155725	9.989703	10.010297	10.145428	9.854572	45
18	30	9.844308	10.155692	9.989766	10.010234	10.145458	9.854542	30
19	45	9.844340	10.155660	9.989829	10.010171	10.145489	9.854511	15
20	20	9.844372	10.155628	9.989893	10.010107	10.145520	9.854480	40
21	15	9.844405	10.155595	9.989956	10.010044	10.145551	9.854449	45
22	30	9.844437	10.155563	9.990019	10.009981	10.145582	9.854418	30
23	45	9.844469	10.155531	9.990082	10.009918	10.145613	9.854387	15
24	21	9.844502	10.155498	9.990145	10.009855	10.145644	9.854356	39
25	15	9.844534	10.155466	9.990208	10.009792	10.145674	9.854326	45
26	30	9.844566	10.155434	9.990272	10.009728	10.145705	9.854295	30
27	45	9.844599	10.155401	9.990335	10.009665	10.145736	9.854264	15
28	22	9.844631	10.155369	9.990398	10.009602	10.145767	9.854233	38
29	15	9.844663	10.155337	9.990461	10.009539	10.145798	9.854202	45
30	30	9.844695	10.155305	9.990524	10.009476	10.145829	9.854171	30
31	45	9.844728	10.155272	9.990588	10.009412	10.145860	9.854140	15
32	23	9.844760	10.155240	9.990651	10.009349	10.145891	9.854109	37
33	15	9.844792	10.155208	9.990714	10.009286	10.145922	9.854078	45
34	30	9.844825	10.155175	9.990777	10.009223	10.145953	9.854047	30
35	45	9.844857	10.155143	9.990840	10.009160	10.145983	9.854017	15
36	24	9.844889	10.155111	9.990903	10.009097	10.146014	9.853986	36
37	15	9.844921	10.155079	9.990967	10.009033	10.146045	9.853955	45
38	30	9.844954	10.155046	9.991030	10.008970	10.146076	9.853924	30
39	45	9.844986	10.155014	9.991093	10.008907	10.146107	9.853893	15
40	25	9.845018	10.154982	9.991156	10.008844	10.146138	9.853862	35
41	15	9.845050	10.154950	9.991219	10.008781	10.146169	9.853831	45
42	30	9.845082	10.154918	9.991283	10.008717	10.146200	9.853800	30
43	45	9.845115	10.154885	9.991346	10.008654	10.146231	9.853769	15
44	26	9.845147	10.154853	9.991409	10.008591	10.146262	9.853738	34
45	15	9.845179	10.154821	9.991472	10.008528	10.146293	9.853707	45
46	30	9.845211	10.154789	9.991535	10.008465	10.146324	9.853676	30
47	45	9.845244	10.154756	9.991598	10.008402	10.146355	9.853645	15
48	27	9.845276	10.154724	9.991662	10.008338	10.146386	9.853614	33
49	15	9.845308	10.154692	9.991725	10.008275	10.146417	9.853583	45
50	30	9.845340	10.154660	9.991788	10.008212	10.146448	9.853552	30
51	45	9.845372	10.154628	9.991851	10.008149	10.146479	9.853521	15
52	28	9.845404	10.154596	9.991914	10.008086	10.146510	9.853490	32
53	15	9.845437	10.154563	9.991977	10.008023	10.146541	9.853459	45
54	30	9.845469	10.154531	9.992041	10.007959	10.146572	9.853428	30
55	45	9.845501	10.154499	9.992104	10.007896	10.146603	9.853397	15
56	29	9.845533	10.154467	9.992167	10.007833	10.146634	9.853366	31
57	15	9.845565	10.154435	9.992230	10.007770	10.146665	9.853335	45
58	30	9.845597	10.154403	9.992293	10.007707	10.146696	9.853304	30
59	45	9.845630	10.154370	9.992357	10.007643	10.146727	9.853273	15
60	30	9.845662	10.154338	9.992420	10.007580	10.146758	9.853242	30
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"
3 ^d 2 ^m .		LOG. SINES, &c.						45 deg.

2 ^d 5 th .		LOG. SINES, &c. (L.)						44 deg.	
sec.	"	sine.	coscant.	tangent.	cotangent.	secant.	cosec.	"	sec.
0	30	9.845662	10.154338	9.902420	10.007580	10.146758	9.855242	30	60
1	15	9.845694	10.154306	9.902483	10.007517	10.146789	9.855211	45	59
2	30	9.845728	10.154274	9.902548	10.007454	10.146820	9.855180	30	58
3	45	9.845758	10.154242	9.902609	10.007391	10.146851	9.855149	15	57
4	31	9.845790	10.154210	9.902672	10.007328	10.146882	9.855118	29	56
5	15	9.845822	10.154178	9.902736	10.007264	10.146913	9.855087	45	55
6	30	9.845854	10.154146	9.902799	10.007201	10.146944	9.855056	30	54
7	45	9.845887	10.154113	9.902862	10.007138	10.146975	9.855025	15	53
8	32	9.845919	10.154081	9.902925	10.007075	10.147006	9.854994	28	52
9	15	9.845951	10.154049	9.902988	10.007012	10.147038	9.854962	45	51
10	30	9.845983	10.154017	9.903051	10.006949	10.147069	9.854931	30	50
11	45	9.846015	10.153985	9.903115	10.006885	10.147100	9.854900	15	49
12	33	9.846047	10.153953	9.903178	10.006822	10.147131	9.854869	27	48
13	15	9.846079	10.153921	9.903241	10.006759	10.147162	9.854838	45	47
14	30	9.846111	10.153889	9.903304	10.006696	10.147193	9.854807	30	46
15	45	9.846143	10.153857	9.903367	10.006633	10.147224	9.854776	15	45
16	34	9.846175	10.153825	9.903430	10.006570	10.147255	9.854745	26	44
17	15	9.846207	10.153793	9.903494	10.006506	10.147286	9.854714	45	43
18	30	9.846239	10.153761	9.903557	10.006443	10.147317	9.854683	30	42
19	45	9.846272	10.153728	9.903620	10.006380	10.147348	9.854651	15	41
20	35	9.846304	10.153696	9.903683	10.006317	10.147380	9.854620	25	40
21	15	9.846336	10.153664	9.903746	10.006254	10.147411	9.854589	45	39
22	30	9.846368	10.153632	9.903810	10.006190	10.147442	9.854558	30	38
23	45	9.846400	10.153600	9.903873	10.006127	10.147473	9.854527	15	37
24	36	9.846432	10.153568	9.903936	10.006064	10.147504	9.854496	24	36
25	15	9.846464	10.153536	9.903999	10.006001	10.147535	9.854465	45	35
26	30	9.846496	10.153504	9.904062	10.005938	10.147566	9.854434	30	34
27	45	9.846528	10.153472	9.904125	10.005875	10.147598	9.854402	15	33
28	37	9.846560	10.153440	9.904189	10.005811	10.147629	9.854371	23	32
29	15	9.846592	10.153408	9.904252	10.005748	10.147660	9.854340	45	31
30	30	9.846624	10.153376	9.904315	10.005685	10.147691	9.854309	30	30
31	45	9.846656	10.153344	9.904378	10.005622	10.147722	9.854278	15	29
32	38	9.846688	10.153312	9.904441	10.005559	10.147753	9.854247	22	28
33	15	9.846720	10.153280	9.904504	10.005496	10.147785	9.854215	45	27
34	30	9.846752	10.153248	9.904568	10.005432	10.147816	9.854184	30	26
35	45	9.846784	10.153216	9.904631	10.005369	10.147847	9.854153	15	25
36	39	9.846816	10.153184	9.904694	10.005306	10.147878	9.854122	21	24
37	15	9.846848	10.153152	9.904757	10.005243	10.147909	9.854091	45	23
38	30	9.846880	10.153120	9.904820	10.005180	10.147941	9.854059	30	22
39	45	9.846912	10.153088	9.904883	10.005117	10.147972	9.854028	15	21
40	40	9.846944	10.153056	9.904947	10.005053	10.148003	9.853997	20	20
41	15	9.846976	10.153024	9.905010	10.004990	10.148034	9.853966	45	19
42	30	9.847007	10.152993	9.905073	10.004927	10.148066	9.853934	30	18
43	45	9.847039	10.152961	9.905136	10.004864	10.148097	9.853903	15	17
44	41	9.847071	10.152929	9.905199	10.004801	10.148128	9.853872	19	16
45	15	9.847103	10.152897	9.905262	10.004738	10.148159	9.853841	45	15
46	30	9.847135	10.152865	9.905326	10.004674	10.148190	9.853810	30	14
47	45	9.847167	10.152833	9.905389	10.004611	10.148222	9.853778	15	13
48	42	9.847199	10.152801	9.905452	10.004548	10.148253	9.853747	18	12
49	15	9.847231	10.152769	9.905515	10.004485	10.148284	9.853716	45	11
50	30	9.847263	10.152737	9.905578	10.004422	10.148315	9.853685	30	10
51	45	9.847296	10.152705	9.905641	10.004359	10.148347	9.853653	15	9
52	43	9.847327	10.152673	9.905705	10.004295	10.148378	9.853622	17	8
53	15	9.847359	10.152641	9.905768	10.004232	10.148409	9.853591	45	7
54	30	9.847390	10.152610	9.905831	10.004169	10.148441	9.853559	30	6
55	45	9.847422	10.152578	9.905894	10.004106	10.148472	9.853528	15	5
56	44	9.847454	10.152546	9.905957	10.004043	10.148503	9.853497	16	4
57	15	9.847486	10.152514	9.906020	10.003980	10.148534	9.853466	45	3
58	30	9.847518	10.152482	9.906084	10.003916	10.148566	9.853434	30	2
59	45	9.847550	10.152450	9.906147	10.003853	10.148597	9.853403	15	1
60	45	9.847582	10.152418	9.906210	10.003790	10.148628	9.853372	15	0
min.	"	sine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
2 ^d 1 st .		LOG. SINES, &c.						45 deg.	

2° 59'		LOG. SINES, &c. (c.)						44 deg.	
sec.		sine.	cosecant	tangent.	cotangent	secant.	cosine.		sec.
0	45	9.847582	10.152418	9.998210	10.003790	10.148828	9.851372	15	60
1	15	9.847614	10.152386	9.998273	10.003727	10.148860	9.851340	45	59
2	30	9.847645	10.152355	9.998338	10.003664	10.148891	9.851309	30	58
3	45	9.847677	10.152323	9.998400	10.003601	10.148922	9.851278	15	57
4	46	9.847709	10.152291	9.998463	10.003537	10.148954	9.851246	14	56
5	15	9.847741	10.152259	9.998526	10.003474	10.148986	9.851215	13	55
6	30	9.847773	10.152227	9.998589	10.003411	10.149018	9.851184	30	54
7	45	9.847806	10.152195	9.998652	10.003348	10.149050	9.851152	15	53
8	47	9.847838	10.152164	9.998715	10.003285	10.149082	9.851121	13	52
9	15	9.847868	10.152132	9.998778	10.003222	10.149114	9.851090	45	51
10	30	9.847900	10.152100	9.998842	10.003158	10.149146	9.851058	30	50
11	45	9.847932	10.152068	9.998906	10.003095	10.149178	9.851027	15	49
12	48	9.847964	10.152036	9.998969	10.003032	10.149210	9.850996	12	48
13	15	9.847995	10.152005	9.999031	10.002969	10.149242	9.850965	45	47
14	30	9.848027	10.151973	9.999094	10.002906	10.149274	9.850934	30	46
15	45	9.848059	10.151941	9.999157	10.002843	10.149306	9.850902	15	45
16	49	9.848091	10.151909	9.999221	10.002779	10.149338	9.850870	11	44
17	15	9.848123	10.151877	9.999284	10.002716	10.149370	9.850839	45	43
18	30	9.848154	10.151846	9.999347	10.002653	10.149402	9.850807	30	42
19	45	9.848186	10.151814	9.999410	10.002590	10.149434	9.850776	15	41
20	50	9.848218	10.151782	9.999473	10.002527	10.149466	9.850745	10	40
21	15	9.848250	10.151750	9.999536	10.002464	10.149498	9.850713	45	39
22	30	9.848281	10.151718	9.999599	10.002400	10.149530	9.850682	30	38
23	45	9.848313	10.151687	9.999663	10.002337	10.149562	9.850650	15	37
24	51	9.848345	10.151655	9.999726	10.002274	10.149594	9.850619	9	36
25	15	9.848377	10.151623	9.999789	10.002211	10.149626	9.850588	45	35
26	30	9.848408	10.151592	9.999852	10.002148	10.149658	9.850556	30	34
27	45	9.848440	10.151560	9.999915	10.002085	10.149690	9.850525	15	33
28	52	9.848472	10.151528	9.999978	10.002022	10.149722	9.850493	8	32
29	15	9.848504	10.151496	9.998042	10.001958	10.149754	9.850462	45	31
30	30	9.848535	10.151465	9.998105	10.001895	10.149786	9.850430	30	30
31	45	9.848567	10.151433	9.998168	10.001832	10.149818	9.850399	15	29
32	53	9.848599	10.151401	9.998231	10.001769	10.149850	9.850367	7	28
33	15	9.848631	10.151369	9.998294	10.001706	10.149882	9.850336	45	27
34	30	9.848662	10.151338	9.998358	10.001642	10.149914	9.850304	30	26
35	45	9.848694	10.151306	9.998421	10.001579	10.149946	9.850273	15	25
36	54	9.848726	10.151274	9.998484	10.001516	10.149978	9.850242	6	24
37	15	9.848757	10.151243	9.998547	10.001453	10.149990	9.850210	45	23
38	30	9.848789	10.151211	9.998610	10.001390	10.150022	9.850179	30	22
39	45	9.848821	10.151179	9.998673	10.001327	10.150054	9.850147	15	21
40	55	9.848852	10.151148	9.998737	10.001263	10.150086	9.850116	5	20
41	15	9.848884	10.151116	9.998800	10.001200	10.150118	9.850084	45	19
42	30	9.848916	10.151084	9.998863	10.001137	10.150150	9.850053	30	18
43	45	9.848947	10.151053	9.998926	10.001074	10.150182	9.850021	15	17
44	56	9.848979	10.151021	9.998989	10.001011	10.150214	9.849990	4	16
45	15	9.849011	10.150989	9.999052	10.000948	10.150246	9.849958	45	15
46	30	9.849042	10.150958	9.999116	10.000884	10.150278	9.849927	30	14
47	45	9.849074	10.150926	9.999179	10.000821	10.150310	9.849896	15	13
48	57	9.849106	10.150894	9.999242	10.000758	10.150342	9.849864	3	12
49	15	9.849137	10.150863	9.999305	10.000695	10.150374	9.849833	45	11
50	30	9.849169	10.150831	9.999368	10.000632	10.150406	9.849801	30	10
51	45	9.849201	10.150799	9.999431	10.000569	10.150438	9.849770	15	9
52	58	9.849232	10.150768	9.999495	10.000505	10.150470	9.849737	2	8
53	15	9.849264	10.150736	9.999558	10.000442	10.150502	9.849706	45	7
54	30	9.849295	10.150705	9.999621	10.000379	10.150534	9.849674	30	6
55	45	9.849327	10.150673	9.999684	10.000316	10.150566	9.849643	15	5
56	59	9.849359	10.150641	9.999747	10.000253	10.150598	9.849611	1	4
57	15	9.849390	10.150610	9.999810	10.000190	10.150630	9.849580	45	3
58	30	9.849422	10.150578	9.999874	10.000126	10.150662	9.849548	30	2
59	45	9.849453	10.150547	9.999937	10.000063	10.150694	9.849517	15	1
60	60	9.849485	10.150515	10.000000	10.000000	10.150726	9.849485	0	0
deg.		cosine.	secant.	cotangent.	tangent.	cosecant.	sine.		sec.
3° 0'		LOG. SINES, &c.						45 deg.	

PROPORTIONAL PARTS.

Consider as many right hand figures decimal fractions as case requires, and the same number of decimal fractions in N^o. taken out as in N^o. entered with.

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	1/2	12
60	56	52	48	44	40	36	32	28	24	20	16	12	8	4	1	for min.
1200	1167	1093	1000	917	833	750	667	583	500	417	333	250	167	83	21	15000
1300	1263	1187	1080	993	907	820	733	647	560	473	387	300	173	87	23	15600
1400	1360	1283	1170	1080	990	900	810	720	630	540	450	360	180	90	24	16200
1500	1467	1387	1270	1170	1080	990	900	810	720	630	540	450	360	180	25	16800
1600	1533	1453	1330	1230	1140	1050	960	870	780	690	600	510	420	330	26	17400
1700	1600	1517	1390	1290	1200	1110	1020	930	840	750	660	570	480	390	27	18000
1800	1667	1583	1460	1360	1270	1180	1090	1000	910	820	730	640	550	460	28	18600
1900	1733	1650	1530	1430	1340	1250	1160	1070	980	890	800	710	620	530	29	19200
2000	1800	1717	1600	1500	1410	1320	1230	1140	1050	960	870	780	690	600	30	19800
2100	1867	1783	1660	1560	1470	1380	1290	1200	1110	1020	930	840	750	660	31	20400
2200	1933	1850	1730	1630	1540	1450	1360	1270	1180	1090	1000	910	820	730	32	21000
2300	2000	1917	1800	1700	1610	1520	1430	1340	1250	1160	1070	980	890	800	33	21600
2400	2067	1983	1860	1760	1670	1580	1490	1400	1310	1220	1130	1040	950	860	34	22200
2500	2133	2050	1930	1830	1740	1650	1560	1470	1380	1290	1200	1110	1020	930	35	22800
2600	2200	2117	2000	1900	1810	1720	1630	1540	1450	1360	1270	1180	1090	1000	36	23400
2700	2267	2183	2060	1960	1870	1780	1690	1600	1510	1420	1330	1240	1150	1060	37	24000
2800	2333	2250	2130	2030	1940	1850	1760	1670	1580	1490	1400	1310	1220	1130	38	24600
2900	2400	2317	2200	2100	2010	1920	1830	1740	1650	1560	1470	1380	1290	1200	39	25200
3000	2467	2383	2260	2160	2070	1980	1890	1800	1710	1620	1530	1440	1350	1260	40	25800
3100	2533	2450	2330	2230	2140	2050	1960	1870	1780	1690	1600	1510	1420	1330	41	26400
3200	2600	2517	2400	2300	2210	2120	2030	1940	1850	1760	1670	1580	1490	1400	42	27000
3300	2667	2583	2460	2360	2270	2180	2090	2000	1910	1820	1730	1640	1550	1460	43	27600
3400	2733	2650	2530	2430	2340	2250	2160	2070	1980	1890	1800	1710	1620	1530	44	28200
3500	2800	2717	2600	2500	2410	2320	2230	2140	2050	1960	1870	1780	1690	1600	45	28800
3600	2867	2783	2660	2560	2470	2380	2290	2200	2110	2020	1930	1840	1750	1660	46	29400
3700	2933	2850	2730	2630	2540	2450	2360	2270	2180	2090	2000	1910	1820	1730	47	30000
3800	3000	2917	2800	2700	2610	2520	2430	2340	2250	2160	2070	1980	1890	1800	48	30600
3900	3067	2983	2860	2760	2670	2580	2490	2400	2310	2220	2130	2040	1950	1860	49	31200
4000	3133	3050	2930	2830	2740	2650	2560	2470	2380	2290	2200	2110	2020	1930	50	31800
4100	3200	3117	3000	2900	2810	2720	2630	2540	2450	2360	2270	2180	2090	2000	51	32400
4200	3267	3183	3060	2960	2870	2780	2690	2600	2510	2420	2330	2240	2150	2060	52	33000
4300	3333	3250	3130	3030	2940	2850	2760	2670	2580	2490	2400	2310	2220	2130	53	33600
4400	3400	3317	3200	3100	3010	2920	2830	2740	2650	2560	2470	2380	2290	2200	54	34200
4500	3467	3383	3260	3160	3070	2980	2890	2800	2710	2620	2530	2440	2350	2260	55	34800
4600	3533	3450	3330	3230	3140	3050	2960	2870	2780	2690	2600	2510	2420	2330	56	35400
4700	3600	3517	3400	3300	3210	3120	3030	2940	2850	2760	2670	2580	2490	2400	57	36000
4800	3667	3583	3460	3360	3270	3180	3090	3000	2910	2820	2730	2640	2550	2460	58	36600
4900	3733	3650	3530	3430	3340	3250	3160	3070	2980	2890	2800	2710	2620	2530	59	37200
5000	3800	3717	3600	3500	3410	3320	3230	3140	3050	2960	2870	2780	2690	2600	60	37800
5100	3867	3783	3660	3560	3470	3380	3290	3200	3110	3020	2930	2840	2750	2660	61	38400
5200	3933	3850	3730	3630	3540	3450	3360	3270	3180	3090	3000	2910	2820	2730	62	39000
5300	4000	3917	3800	3700	3610	3520	3430	3340	3250	3160	3070	2980	2890	2800	63	39600
5400	4067	3983	3860	3760	3670	3580	3490	3400	3310	3220	3130	3040	2950	2860	64	40200
5500	4133	4050	3930	3830	3740	3650	3560	3470	3380	3290	3200	3110	3020	2930	65	40800
5600	4200	4117	4000	3900	3810	3720	3630	3540	3450	3360	3270	3180	3090	3000	66	41400
5700	4267	4183	4060	3960	3870	3780	3690	3600	3510	3420	3330	3240	3150	3060	67	42000
5800	4333	4250	4130	4030	3940	3850	3760	3670	3580	3490	3400	3310	3220	3130	68	42600
5900	4400	4317	4200	4100	4010	3920	3830	3740	3650	3560	3470	3380	3290	3200	69	43200
6000	4467	4383	4260	4160	4070	3980	3890	3800	3710	3620	3530	3440	3350	3260	70	43800
6100	4533	4450	4330	4230	4140	4050	3960	3870	3780	3690	3600	3510	3420	3330	71	44400
6200	4600	4517	4400	4300	4210	4120	4030	3940	3850	3760	3670	3580	3490	3400	72	45000
6300	4667	4583	4460	4360	4270	4180	4090	4000	3910	3820	3730	3640	3550	3460	73	45600
6400	4733	4650	4530	4430	4340	4250	4160	4070	3980	3890	3800	3710	3620	3530	74	46200
6500	4800	4717	4600	4500	4410	4320	4230	4140	4050	3960	3870	3780	3690	3600	75	46800
6600	4867	4783	4660	4560	4470	4380	4290	4200	4110	4020	3930	3840	3750	3660	76	47400
6700	4933	4850	4730	4630	4540	4450	4360	4270	4180	4090	4000	3910	3820	3730	77	48000
6800	5000	4917	4800	4700	4610	4520	4430	4340	4250	4160	4070	3980	3890	3800	78	48600
6900	5067	4983	4860	4760	4670	4580	4490	4400	4310	4220	4130	4040	3950	3860	79	49200
7000	5133	5050	4930	4830	4740	4650	4560	4470	4380	4290	4200	4110	4020	3930	80	49800
7100	5200	5117	5000	4900	4810	4720	4630	4540	4450	4360	4270	4180	4090	4000	81	50400
7200	5267	5183	5060	4960	4870	4780	4690	4600	4510	4420	4330	4240	4150	4060	82	51000
7300	5333	5250	5130	5030	4940	4850	4760	4670	4580	4490	4400	4310	4220	4130	83	51600
7400	5400	5317	5200	5100	5010	4920	4830	4740	4650	4560	4470	4380	4290	4200	84	52200
7500	5467	5383	5260	5160	5070	4980	4890	4800	4710	4620	4530	4440	4350	4260	85	52800
7600	5533	5450	5330	5230	5140	5050	4960	4870	4780	4690	4600	4510	4420	4330	86	53400
7700	5600	5517	5400	5300	5210	5120	5030	4940	4850	4760	4670	4580	4490	4400	87	54000
7800	5667	5583	5460	5360	5270	5180	5090	5000	4910	4820	4730	4640	4550	4460	88	54600
7900	5733	5650	5530	5430	5340	5250	5160	5070	4980	4890	4800	4710	4620	4530	89	55200
8000	5800	5717	5600	5500	5410	5320	5230	5140	5050	4960	4870	4780	4690	4600	90	55800
8100	5867	5783	5660	5560	5470	5380	5290	5200	5110	5020	4930	4840	4750	4660	91	56400
8200	5933	5850	5730	5630	5540	5450	5360	5270	5180	5090	5000	4910	4820	4730	92	57000
8300	6000	5917	5800	5700	5610	5520	5430	5340	5250	5160	5070	4980	4890	4800	93	57600
8400	6067	5983	5860	5760	5670	5580	5490	5400	5310	5220	5130	5040	4950	4860	94	58200
8500	6133	6050	5930	5830	5740	5650	5560	5470	5380	5290	5200	5110	5020	4930	95	58800
8600	6200	6117	6000	5900	5810	5720	5630	5540	5450	5360	5270	5180	5090	5000	96	59400
8700	6267	6183	6060	5960	5870	5780	5690	5600	5510	5420	5330	5240	5150	5060	97	60000
8800	6333	6250	6130	6030	5940	5850	5760	5670	5580	5490	5400	5310	5220	5130	98	

0 Hours.

Log. Haverline. (f)

0 Hours.

0 ^m		1 ^m	2 ^m	3 ^m	4 ^m	5 ^m	6 ^m	7 ^m	8 ^m	9 ^m
0 deg.					1 deg.			2 deg.		
0	0.000000	1.338787	2.639816	3.815905	4.940842	6.037749	7.116926	8.183868	9.241855	10.293002
1	0.560637	345965	643420	818311	942647	039194	118131	184901	242759	293805
2	0.861666	353027	646994	820704	944446	040634	119332	185931	243661	294607
3	1.037758	359976	650539	823084	946236	042070	120530	186959	244561	295407
4	1.186366	3.66815	2.654056	1.825450	2.948020	3.043501	3.121725	3.187985	3.245459	3.296206
5	1.256606	373549	657544	827804	949796	044927	123916	189008	246355	297004
6	1.338787	380179	661005	830146	951565	046348	124104	190028	247350	297800
7	1.405735	386710	664438	832474	953327	047765	125289	191046	248142	298599
8	1.463726	3.393144	2.667844	1.834790	2.955081	3.049178	3.126471	3.192062	3.249033	3.299388
9	1.518799	399484	671224	837094	956829	050585	127649	192076	249922	300179
10	1.560636	405733	674578	839186	958570	051988	128825	194087	250809	300970
11	1.602028	411894	677905	841666	960304	053387	129997	195095	251694	301759
12	1.639817	2.417968	2.681208	1.843934	2.962030	3.054781	3.131166	3.196102	3.252578	3.302546
13	1.674579	423958	684486	846190	963750	056171	132331	196102	253460	303324
14	1.706764	429867	687739	848434	965463	057556	133494	198108	254339	304176
15	1.736727	435696	690968	850667	967170	058937	134654	199107	255218	304999
16	1.764756	2.441449	2.694173	1.852888	2.968870	3.060313	3.135810	3.200104	3.256094	3.305681
17	1.791085	447126	697355	855098	970563	061685	136649	201099	256963	306461
18	1.815908	452730	700513	857297	972249	063053	138114	202092	257841	307240
19	1.839390	458262	703649	859485	973929	064417	139261	203082	258713	308018
20	1.861666	2.463725	2.706762	1.861662	2.975603	3.065776	3.140406	3.204070	3.259582	3.308794
21	1.882855	4690054	709853	863828	977270	067131	141547	205056	260450	309569
22	1.903059	474449	711922	865983	978931	068482	142685	206039	261315	310343
23	1.923264	479713	715970	868128	980585	069828	143821	207021	262180	311114
24	1.940847	2.484914	2.718996	1.870262	2.982233	3.071171	3.144953	3.208000	3.263042	3.311885
25	1.958155	490054	723002	872386	983875	072509	146082	208977	263903	312645
26	1.975600	495134	724987	874499	985511	073843	147209	209952	264762	313424
27	1.992000	500154	727951	876602	987140	075173	148332	210924	265619	314188
28	2.007794	2.505118	2.730895	1.878695	2.988764	3.076499	3.149453	3.211895	3.266475	3.314953
29	2.023034	510035	733820	880778	990381	077821	150571	212896	267329	315717
30	2.037757	514878	736725	882851	991993	079139	151686	213829	268181	316480
31	2.051998	519676	739611	884914	993598	080453	152798	214793	269031	317241
32	2.065786	2.524423	2.742477	1.886967	2.995198	3.081763	3.153907	3.215755	3.269881	3.318001
33	2.079105	529118	745325	889011	996791	083069	155014	216714	270798	318759
34	2.092115	533763	748154	891045	998379	084372	156117	217672	271574	319516
35	2.104704	538358	750965	893070	999962	085670	157218	218627	272468	320272
36	2.116938	2.542906	2.753758	1.895085	3.001538	3.086964	3.158316	3.219581	3.273261	3.321002
37	2.128837	547407	756533	897091	1003108	088255	159411	220532	274108	321760
38	2.140419	551861	759391	899088	1004673	089542	160504	221481	274940	322533
39	2.151700	556270	762031	901075	1006233	090825	161593	222428	275777	323288
40	2.162696	2.560635	2.764753	1.903054	3.007786	3.092104	3.162681	3.223373	3.276613	3.324000
41	2.173420	564956	767459	905023	1009335	093379	163765	224316	277448	324768
42	2.183885	569235	770148	906984	1010877	094651	164846	225257	278280	325512
43	2.194104	573472	772821	908936	1012415	095919	165925	226196	279111	326262
44	2.204088	2.577668	2.775477	1.910879	3.013947	3.097183	3.167002	3.227133	3.279941	3.327000
45	2.213848	581824	778117	912814	1015473	098444	168075	228068	280769	327760
46	2.223394	585941	780747	914789	1016994	099701	169146	229001	281595	328516
47	2.232733	590018	783350	916657	1018510	100954	170214	229932	282420	329272
48	2.241877	2.594059	2.785942	1.918566	3.020020	3.102204	3.171280	3.230861	3.283243	3.329000
49	2.250833	598061	788530	920466	1021526	103450	172343	231788	284065	330760
50	2.259606	602027	791082	922359	1023036	104692	173404	232713	284885	331512
51	2.268206	605958	793629	924243	1024521	105931	174461	233636	285703	332262
52	2.276639	2.609853	2.796161	1.926119	3.026018	3.107167	3.175517	3.234557	3.286520	3.332000
53	2.284911	613713	798679	927987	1027495	108399	176520	235476	287336	333760
54	2.293029	617539	801182	929846	1028975	109627	177620	236393	288150	334512
55	2.300998	621332	803671	931698	1030450	110852	178667	237308	288962	335262
56	2.308824	2.625093	2.806146	1.933543	3.037191	3.112074	3.179713	3.238221	3.289773	3.333000
57	2.316510	628820	808606	935379	1033384	113292	180755	239132	290583	334000
58	2.324064	632517	811053	937207	1034844	114507	181795	240042	291390	334760
59	2.331487	636181	813486	939028	1036298	115718	182833	240949	292197	335512
60	2.338787	2.639816	2.815905	1.940842	3.037749	3.116926	3.183868	3.241855	3.293002	3.336000

23 Hours.

23 Hours.

10 ^m	11 ^m	12 ^m	13 ^m	14 ^m	15 ^m	16 ^m	17 ^m	18 ^m	19 ^m
2 deg.		3 deg.				4 deg.			
0	3.33875	3.38013	3.41791	3.45267	3.48484	3.51480	3.54219	3.56913	3.59348
15	3.3476	3.38796	4.18521	4.53229	4.85364	5.15283	5.43271	5.69562	5.94350
30	3.40198	3.81452	4.19223	4.53784	4.85880	5.15765	5.43733	5.69987	5.94751
45	3.40918	3.82107	4.19734	4.54339	4.86395	5.16246	5.44173	5.70411	5.95152
60	3.41638	3.82762	4.20324	4.54893	4.86910	5.16736	5.44624	5.70836	5.95553
75	3.42356	3.83415	4.20924	4.55447	4.87424	5.17206	5.45074	5.71259	5.95953
90	3.43074	3.84068	4.21522	4.56000	4.87938	5.17686	5.45524	5.71883	5.96353
105	3.43789	3.84719	4.22120	4.56551	4.88451	5.18164	5.45973	5.72505	5.96753
120	3.44504	3.85370	4.22717	4.57103	4.88963	5.18643	5.46422	5.73128	5.97152
135	3.45218	3.86019	4.23313	4.57653	4.89475	5.19121	5.46870	5.73749	5.97550
150	3.45930	3.86668	4.23908	4.58203	4.89986	5.19598	5.47318	5.74372	5.97949
165	3.46640	3.87315	4.24502	4.58752	4.90496	5.20075	5.47760	5.74993	5.98347
180	3.47355	3.87962	4.25096	4.59301	4.91006	5.20551	5.48212	5.75614	5.98745
195	3.48060	3.88608	4.25688	4.59849	4.91515	5.21027	5.48658	5.76234	5.99142
210	3.48768	3.89253	4.26281	4.60396	4.92024	5.21503	5.49104	5.76854	5.99539
225	3.49475	3.89896	4.26871	4.60943	4.92532	5.21977	5.49550	5.77474	5.99935
240	3.50180	3.90539	4.27464	4.61489	4.93040	5.22451	5.49995	5.78093	6.00332
255	3.50885	3.91181	4.28051	4.62033	4.93546	5.22925	5.50439	5.78712	6.00727
270	3.51588	3.91822	4.28640	4.62578	4.94053	5.23398	5.50883	5.79330	6.01123
285	3.52290	3.92463	4.29228	4.63122	4.94558	5.23871	5.51327	5.79948	6.01518
300	3.52991	3.93101	4.29815	4.63665	4.95064	5.24343	5.51770	5.77566	6.01913
315	3.53691	3.93739	4.30402	4.64207	4.95568	5.24814	5.52213	5.77983	6.02307
330	3.54389	3.94376	4.30987	4.64749	4.96072	5.25286	5.52655	5.78400	6.02701
345	3.55087	3.95012	4.31573	4.65290	4.96575	5.25757	5.53097	5.78816	6.03095
360	3.55783	3.95647	4.32156	4.65830	4.97078	5.26226	5.53539	5.79232	6.03489
375	3.56478	3.96283	4.32739	4.66370	4.97580	5.26696	5.53979	5.79648	6.03881
390	3.57173	3.96915	4.33322	4.66909	4.98082	5.27165	5.54420	5.80065	6.04274
405	3.57866	3.97547	4.33903	4.67447	4.98583	5.27633	5.54860	5.80478	6.04666
420	3.58558	3.98179	4.34484	4.67985	4.99084	5.28102	5.55300	5.80892	6.05058
435	3.59249	3.98810	4.35064	4.68522	4.99583	5.28569	5.55739	5.81306	6.05450
450	3.59939	3.99440	4.35644	4.69059	5.00083	5.29036	5.56177	5.81720	6.05841
465	3.60627	4.00068	4.36222	4.69594	5.00581	5.29503	5.56616	5.82133	6.06232
480	3.61315	4.00696	4.36800	4.70129	5.01080	5.29969	5.57054	5.82546	6.06623
495	3.62002	4.01323	4.37377	4.70663	5.01577	5.30434	5.57491	5.82958	6.07012
510	3.62687	4.01949	4.37953	4.71197	5.02074	5.30899	5.57928	5.83370	6.07403
525	3.63372	4.02574	4.38528	4.71730	5.02571	5.31364	5.58364	5.83782	6.07792
540	3.64054	4.03199	4.39103	4.72263	5.03067	5.31828	5.58800	5.84193	6.08181
555	3.64736	4.03822	4.39677	4.72794	5.03562	5.32291	5.59236	5.84604	6.08570
570	3.65418	4.04445	4.40250	4.73325	5.04057	5.32755	5.59671	5.85015	6.08958
585	3.66098	4.05066	4.40822	4.73856	5.04551	5.33217	5.60106	5.85424	6.09346
600	3.66777	4.05687	4.41394	4.74386	5.05045	5.33679	5.60540	5.85834	6.09734
615	3.67455	4.06307	4.41965	4.74914	5.05537	5.34141	5.60974	5.86244	6.10121
630	3.68133	4.06926	4.42535	4.75443	5.06030	5.34602	5.61408	5.86653	6.10508
645	3.68807	4.07544	4.43105	4.75971	5.06522	5.35062	5.61840	5.87061	6.10895
660	3.69482	4.08161	4.43674	4.76498	5.07014	5.35523	5.62273	5.87469	6.11281
675	3.70156	4.08777	4.44241	4.77025	5.07504	5.35982	5.62705	5.87877	6.11667
690	3.70829	4.09393	4.44809	4.77551	5.07995	5.36442	5.63137	5.88285	6.12053
705	3.71500	4.10007	4.45375	4.78076	5.08484	5.36900	5.63568	5.88693	6.12438
720	3.72171	4.10621	4.45941	4.78601	5.08974	5.37358	5.63999	5.89098	6.12823
735	3.72840	4.11234	4.46506	4.79125	5.09462	5.37816	5.64430	5.89504	6.13208
750	3.73509	4.11846	4.47070	4.79648	5.09950	5.38273	5.64860	5.89910	6.13592
765	3.74176	4.12457	4.47633	4.80171	5.10438	5.38730	5.65289	5.90316	6.13976
780	3.74843	4.13068	4.48196	4.80693	5.10925	5.39186	5.65719	5.90721	6.14360
795	3.75508	4.13677	4.48758	4.81215	5.11411	5.39642	5.66147	5.91125	6.14743
810	3.76173	4.14286	4.49320	4.81736	5.11897	5.40097	5.66576	5.91530	6.15126
825	3.76836	4.14893	4.49880	4.82256	5.12382	5.40552	5.67003	5.91934	6.15508
840	3.77499	4.15500	4.50440	4.82775	5.12867	5.41007	5.67431	5.92338	6.15891
855	3.78160	4.16106	4.50999	4.83294	5.13351	5.41460	5.67858	5.92741	6.16273
870	3.78821	4.16711	4.51558	4.83813	5.13835	5.41914	5.68285	5.93144	6.16654
885	3.79480	4.17315	4.52115	4.84330	5.14318	5.42366	5.68711	5.93546	6.17035
900	3.80138	4.17919	4.52672	4.84848	5.14801	5.42819	5.69137	5.93948	6.17417

	20 ^m	21 ^m	22 ^m	23 ^m	24 ^m	25 ^m	26 ^m	27 ^m	28 ^m
	5 deg.				6 deg.			7 deg.	
0	3.63680	3.66085	3.68104	3.70033	3.71880	3.73651	3.75352	3.76990	3.78567
1	640041	661199	681372	700647	719102	736801	753806	770167	785933
2	640402	661543	681700	700961	719402	737090	754084	770435	786191
3	640763	661887	682018	701275	719703	737379	754361	770702	786449
4	641124	662230	682356	701589	720004	737667	754639	770970	786707
5	641484	662573	682684	701902	720304	737956	754916	771237	786964
6	641844	662916	683012	702215	720604	738244	755193	771504	787222
7	642204	663259	683338	702528	720904	738532	755470	771770	787479
8	642563	663601	683665	702841	721204	738820	755747	772037	787736
9	642922	663943	683992	703153	721503	739107	756023	772303	787992
10	643281	664285	684318	703466	721803	739395	756300	772569	788249
11	643640	664627	684644	703778	722102	739683	756576	772835	788506
12	643998	664968	684971	704090	722401	739969	756852	773101	788762
13	644356	665309	685296	704401	722700	740256	757128	773367	789018
14	644714	665650	685622	704713	723000	740543	757404	773633	789275
15	645071	665990	685947	705024	723297	740829	757679	773898	789531
16	645428	666331	686272	705335	723595	741115	757955	774163	789787
17	645785	666671	686597	705645	723893	741401	758230	774428	790043
18	646141	667011	686921	705956	724190	741687	758505	774693	790298
19	646497	667350	687245	706266	724488	741973	758779	774958	790553
20	646853	667689	687569	706577	724785	742259	759054	775223	790808
21	647209	668028	687893	706886	725082	742544	759329	775487	791063
22	647564	668367	688216	707196	725379	742829	759603	775751	791318
23	647919	668705	688539	707505	725676	743114	759877	776015	791573
24	648274	669043	688862	707815	725972	743399	760151	776279	791828
25	648628	669381	689185	708123	726268	743683	760425	776543	792082
26	648983	669719	689508	708432	726564	743968	760699	776807	792337
27	649336	670056	689830	708740	726861	744252	760972	777070	792590
28	649690	670393	690152	709049	727156	744536	761245	777333	792845
29	650043	670730	690473	709357	727452	744820	761518	777596	793098
30	650396	671067	690795	709665	727747	745103	761791	777859	793352
31	650749	671403	691117	709972	728042	745387	762064	778122	793606
32	651102	671739	691438	710280	728337	745670	762337	778385	793859
33	651455	672074	691758	710587	728632	745953	762609	778647	794112
34	651808	672410	692079	710894	728926	746236	762881	778910	794366
35	652157	672745	692399	711201	729220	746519	763153	779172	794618
36	652508	673080	692720	711507	729514	746801	763425	779434	794872
37	652859	673415	693039	711814	729808	747084	763697	779696	795124
38	653210	673750	693359	712120	730101	747366	763968	779958	795377
39	653560	674084	693679	712426	730395	747648	764240	780219	795629
40	653911	674418	693998	712731	730688	747930	764511	780480	795881
41	654260	674751	694317	713037	730981	748211	764782	780741	796133
42	654610	675085	694636	713343	731274	748493	765053	781003	796385
43	654959	675418	694954	713647	731567	748774	765323	781263	796637
44	655308	675751	695272	713952	731859	749055	765594	781524	796889
45	655657	676083	695590	714256	732152	749336	765864	781785	797140
46	656006	676416	695908	714561	732444	749617	766135	782045	797392
47	656354	676748	696226	714865	732736	749897	766405	782305	797643
48	656702	677080	696543	715169	733027	750178	766675	782566	797894
49	657049	677412	696860	715473	733318	750458	766944	782826	798145
50	657397	677743	697177	715766	733610	750738	767214	783086	798396
51	657743	678074	697493	716060	733901	751017	767483	783345	798646
52	658090	678405	697810	716363	734192	751297	767752	783605	798897
53	658437	678736	698126	716666	734483	751576	768021	783864	799147
54	658783	679066	698442	716968	734773	751856	768290	784123	799397
55	659129	679396	698758	717271	735063	752135	768559	784382	799647
56	659475	679726	699073	717593	735353	752414	768827	784641	799897
57	659820	680056	699388	717895	735643	752692	769096	784900	800147
58	660165	680385	699704	718197	735933	752971	769364	785159	800397
59	660510	680714	700018	718498	736222	753249	769632	785417	800647
60	660855	681043	700333	718800	736512	753528	769900	785675	800896
	39 ^m	38 ^m	37 ^m	36 ^m	35 ^m	34 ^m	33 ^m	32 ^m	31 ^m

	40"	41"	42"	43"	44"	45"	46"	47"	48"	49"
	10 deg.				11 deg.				12 deg.	
0	3.940396	3.950992	3.961429	3.971619	3.981573	3.991302	4.000816	4.010124	4.019235	4.02815
1	3.940476	3.951072	3.961509	3.971699	3.981653	3.991382	4.000896	4.010204	4.019315	4.02822
2	3.940557	3.951153	3.961590	3.971780	3.981734	3.991463	4.000972	4.010280	4.019391	4.02833
3	3.940637	3.951234	3.961671	3.971861	3.981815	3.991543	4.001052	4.010360	4.019471	4.02841
4	3.940717	3.951314	3.961751	3.971941	3.981895	3.991623	4.001132	4.010440	4.019551	4.02849
5	3.940797	3.951394	3.961831	3.972021	3.981975	3.991703	4.001212	4.010520	4.019631	4.02857
6	3.940877	3.951474	3.961911	3.972101	3.982055	3.991783	4.001292	4.010600	4.019711	4.02865
7	3.940957	3.951554	3.961991	3.972181	3.982135	3.991863	4.001372	4.010680	4.019791	4.02873
8	3.941037	3.951634	3.962071	3.972261	3.982215	3.991943	4.001452	4.010760	4.019871	4.02881
9	3.941117	3.951714	3.962151	3.972341	3.982295	3.992023	4.001532	4.010840	4.019951	4.02889
10	3.941197	3.951794	3.962231	3.972421	3.982375	3.992103	4.001612	4.010920	4.020031	4.02897
11	3.941277	3.951874	3.962311	3.972501	3.982455	3.992183	4.001692	4.011000	4.020111	4.02905
12	3.941357	3.951954	3.962391	3.972581	3.982535	3.992263	4.001772	4.011080	4.020191	4.02913
13	3.941437	3.952034	3.962471	3.972661	3.982615	3.992343	4.001852	4.011160	4.020271	4.02921
14	3.941517	3.952114	3.962551	3.972741	3.982695	3.992423	4.001932	4.011240	4.020351	4.02929
15	3.941597	3.952194	3.962631	3.972821	3.982775	3.992503	4.002012	4.011320	4.020431	4.02937
16	3.941677	3.952274	3.962711	3.972901	3.982855	3.992583	4.002092	4.011400	4.020511	4.02945
17	3.941757	3.952354	3.962791	3.972981	3.982935	3.992663	4.002172	4.011480	4.020591	4.02953
18	3.941837	3.952434	3.962871	3.973061	3.983015	3.992743	4.002252	4.011560	4.020671	4.02961
19	3.941917	3.952514	3.962951	3.973141	3.983095	3.992823	4.002332	4.011640	4.020751	4.02969
20	3.941997	3.952594	3.963031	3.973221	3.983175	3.992903	4.002412	4.011720	4.020831	4.02977
21	3.942077	3.952674	3.963111	3.973301	3.983255	3.992983	4.002492	4.011800	4.020911	4.02985
22	3.942157	3.952754	3.963191	3.973381	3.983335	3.993063	4.002572	4.011880	4.020991	4.02993
23	3.942237	3.952834	3.963271	3.973461	3.983415	3.993143	4.002652	4.011960	4.021071	4.03001
24	3.942317	3.952914	3.963351	3.973541	3.983495	3.993223	4.002732	4.012040	4.021151	4.03009
25	3.942397	3.952994	3.963431	3.973621	3.983575	3.993303	4.002812	4.012120	4.021231	4.03017
26	3.942477	3.953074	3.963511	3.973701	3.983655	3.993383	4.002892	4.012200	4.021311	4.03025
27	3.942557	3.953154	3.963591	3.973781	3.983735	3.993463	4.002972	4.012280	4.021391	4.03033
28	3.942637	3.953234	3.963671	3.973861	3.983815	3.993543	4.003052	4.012360	4.021471	4.03041
29	3.942717	3.953314	3.963751	3.973941	3.983895	3.993623	4.003132	4.012440	4.021551	4.03049
30	3.942797	3.953394	3.963831	3.974021	3.983975	3.993703	4.003212	4.012520	4.021631	4.03057
31	3.942877	3.953474	3.963911	3.974101	3.984055	3.993783	4.003292	4.012600	4.021711	4.03065
32	3.942957	3.953554	3.963991	3.974181	3.984135	3.993863	4.003372	4.012680	4.021791	4.03073
33	3.943037	3.953634	3.964071	3.974261	3.984215	3.993943	4.003452	4.012760	4.021871	4.03081
34	3.943117	3.953714	3.964151	3.974341	3.984295	3.994023	4.003532	4.012840	4.021951	4.03089
35	3.943197	3.953794	3.964231	3.974421	3.984375	3.994103	4.003612	4.012920	4.022031	4.03097
36	3.943277	3.953874	3.964311	3.974501	3.984455	3.994183	4.003692	4.013000	4.022111	4.03105
37	3.943357	3.953954	3.964391	3.974581	3.984535	3.994263	4.003772	4.013080	4.022191	4.03113
38	3.943437	3.954034	3.964471	3.974661	3.984615	3.994343	4.003852	4.013160	4.022271	4.03121
39	3.943517	3.954114	3.964551	3.974741	3.984695	3.994423	4.003932	4.013240	4.022351	4.03129
40	3.943597	3.954194	3.964631	3.974821	3.984775	3.994503	4.004012	4.013320	4.022431	4.03137
41	3.943677	3.954274	3.964711	3.974901	3.984855	3.994583	4.004092	4.013400	4.022511	4.03145
42	3.943757	3.954354	3.964791	3.974981	3.984935	3.994663	4.004172	4.013480	4.022591	4.03153
43	3.943837	3.954434	3.964871	3.975061	3.985015	3.994743	4.004252	4.013560	4.022671	4.03161
44	3.943917	3.954514	3.964951	3.975141	3.985095	3.994823	4.004332	4.013640	4.022751	4.03169
45	3.943997	3.954594	3.965031	3.975221	3.985175	3.994903	4.004412	4.013720	4.022831	4.03177
46	3.944077	3.954674	3.965111	3.975301	3.985255	3.994983	4.004492	4.013800	4.022911	4.03185
47	3.944157	3.954754	3.965191	3.975381	3.985335	3.995063	4.004572	4.013880	4.022991	4.03193
48	3.944237	3.954834	3.965271	3.975461	3.985415	3.995143	4.004652	4.013960	4.023071	4.03201
49	3.944317	3.954914	3.965351	3.975541	3.985495	3.995223	4.004732	4.014040	4.023151	4.03209
50	3.944397	3.954994	3.965431	3.975621	3.985575	3.995303	4.004812	4.014120	4.023231	4.03217
51	3.944477	3.955074	3.965511	3.975701	3.985655	3.995383	4.004892	4.014200	4.023311	4.03225
52	3.944557	3.955154	3.965591	3.975781	3.985735	3.995463	4.004972	4.014280	4.023391	4.03233
53	3.944637	3.955234	3.965671	3.975861	3.985815	3.995543	4.005052	4.014360	4.023471	4.03241
54	3.944717	3.955314	3.965751	3.975941	3.985895	3.995623	4.005132	4.014440	4.023551	4.03249
55	3.944797	3.955394	3.965831	3.976021	3.985975	3.995703	4.005212	4.014520	4.023631	4.03257
56	3.944877	3.955474	3.965911	3.976101	3.986055	3.995783	4.005292	4.014600	4.023711	4.03265
57	3.944957	3.955554	3.965991	3.976181	3.986135	3.995863	4.005372	4.014680	4.023791	4.03273
58	3.945037	3.955634	3.966071	3.976261	3.986215	3.995943	4.005452	4.014760	4.023871	4.03281
59	3.945117	3.955714	3.966151	3.976341	3.986295	3.996023	4.005532	4.014840	4.023951	4.03289
60	3.945197	3.955794	3.966231	3.976421	3.986375	3.996103	4.005612	4.014920	4.024031	4.03297
61	3.945277	3.955874	3.966311	3.976501	3.986455	3.996183	4.005692	4.015000	4.024111	4.03305
62	3.945357	3.955954	3.966391	3.976581	3.986535	3.996263	4.005772	4.015080	4.024191	4.03313
63	3.945437	3.956034	3.966471	3.976661	3.986615	3.996343	4.005852	4.015160	4.024271	4.03321
64	3.945517	3.956114	3.966551	3.976741	3.986695	3.996423	4.005932	4.015240	4.024351	4.03329
65	3.945597	3.956194	3.966631	3.976821	3.986775	3.996503	4.006012	4.015320	4.024431	4.03337
66	3.945677	3.956274	3.966711	3.976901	3.986855	3.996583	4.006092	4.015400	4.024511	4.03345
67	3.945757	3.956354	3.966791	3.976981	3.986935	3.996663	4.006172	4.015480	4.024591	4.03353
68	3.945837	3.956434	3.966871	3.977061	3.987015	3.996743	4.006252	4.015560	4.024671	4.03361
69	3.945917	3.956514	3.966951	3.977141	3.987095	3.996823	4.006332	4.015640	4.024751	4.03369
70	3.945997	3.956594	3.967031	3.977221	3.987175	3.996903	4.006412	4.015720	4.024831	4.03377
71	3.946077	3.956674	3.967111	3.977301	3.987255	3.996983	4.006492	4.015800	4.024911	4.03385
72	3.946157	3.956754	3.967191	3.977381	3.987335	3.997063	4.006572	4.015880	4.024991	4.03393
73	3.946237	3.956834	3.967271	3.977461	3.987415	3.997143	4.006652	4.015960	4.025071	4.03401
74	3.946317	3.956914	3.967351	3.977541	3.987495	3.997223	4.006732	4.016040	4.025151	4.03409
75	3.946397	3.956994	3.967431	3.977621	3.987575	3.997303	4.006812	4.016120	4.025231	4.03417
76	3.946477	3.957074	3.967511	3.977701	3.987655	3.997383	4.006892	4.016200	4.025311	4.03425
77	3.946557	3.957154	3.967591	3.977781	3.987735	3.997463	4.006972	4.016280	4.025391	4.03433
78	3.946637	3.957234	3.967671	3.977861	3.987815	3.997543	4.007052	4.016360	4.025471	4.03441
79	3.946717	3.957314	3.967751	3.977941	3.987895	3.997623	4.007132	4.016440	4.025551	4.03449
80	3.946797	3.957394	3.967831	3.978021	3.987975	3.997703	4.007212	4.016520	4.025631	4.03457
81	3.946877	3.957474	3.967911	3.978101	3.988055	3.997783	4.007292	4.016600	4.025711	4.03465
82	3.946957	3.957554	3.967991	3.978181	3.988135	3.997863	4.007372	4.016680	4.025791	4.03473
83	3.947037	3.957634	3.968071	3.978261	3.988215	3.997943	4.007452	4.016760	4.025871	4.03481
84	3.947117	3.957714	3.968151	3.978341	3.988295	3.998023	4.007532	4.016840	4.025951	

0 HOUR.

Log. Haverline. (1)

0 HOUR.

50"		51"	52"	53"	54"	55"	56"	57"	58"	59"	
12 deg.		13 deg.				14 deg.					
0	0.06896	0.04546	0.05385	0.06105	0.07017	0.07810	0.08584	0.09342	0.10105	0.10843	60
1	0.07040	0.04560	0.05397	0.06121	0.07030	0.07823	0.08602	0.09368	0.10118	0.10856	59
2	0.07184	0.04574	0.05413	0.06136	0.07043	0.07836	0.08615	0.09379	0.10128	0.10868	58
3	0.07328	0.04588	0.05427	0.06150	0.07057	0.07850	0.08628	0.09391	0.10142	0.10880	57
4	0.07472	0.04602	0.05441	0.06163	0.07070	0.07863	0.08640	0.09404	0.10155	0.10892	56
5	0.07616	0.04616	0.05455	0.06177	0.07084	0.07876	0.08653	0.09417	0.10167	0.10904	55
6	0.07760	0.04630	0.05468	0.06190	0.07097	0.07889	0.08665	0.09430	0.10180	0.10917	54
7	0.07904	0.04644	0.05482	0.06204	0.07110	0.07902	0.08679	0.09445	0.10192	0.10929	53
8	0.08048	0.04658	0.05496	0.06218	0.07124	0.07915	0.08692	0.09455	0.10204	0.10941	52
9	0.08191	0.04671	0.05510	0.06231	0.07137	0.07928	0.08705	0.09467	0.10217	0.10953	51
10	0.08335	0.04685	0.05524	0.06245	0.07150	0.07941	0.08717	0.09478	0.10229	0.10965	50
11	0.08479	0.04698	0.05538	0.06258	0.07164	0.07954	0.08730	0.09489	0.10241	0.10977	49
12	0.08623	0.04712	0.05551	0.06271	0.07177	0.07967	0.08743	0.09505	0.10254	0.10990	48
13	0.08766	0.04725	0.05565	0.06285	0.07190	0.07980	0.08756	0.09518	0.10266	0.11002	47
14	0.08910	0.04739	0.05579	0.06298	0.07204	0.07993	0.08769	0.09530	0.10278	0.11014	46
15	0.09053	0.04752	0.05592	0.06312	0.07217	0.08006	0.08781	0.09543	0.10291	0.11026	45
16	0.09197	0.04766	0.05606	0.06325	0.07230	0.08019	0.08794	0.09555	0.10303	0.11038	44
17	0.09340	0.04779	0.05619	0.06339	0.07243	0.08032	0.08807	0.09568	0.10316	0.11050	43
18	0.09484	0.04793	0.05633	0.06352	0.07256	0.08045	0.08820	0.09580	0.10328	0.11062	42
19	0.09627	0.04806	0.05646	0.06365	0.07269	0.08058	0.08833	0.09593	0.10340	0.11075	41
20	0.09771	0.04820	0.05660	0.06378	0.07282	0.08071	0.08845	0.09606	0.10353	0.11087	40
21	0.09914	0.04833	0.05673	0.06391	0.07295	0.08084	0.08858	0.09618	0.10365	0.11099	39
22	0.10058	0.04847	0.05687	0.06404	0.07308	0.08097	0.08871	0.09631	0.10378	0.11111	38
23	0.10201	0.04860	0.05700	0.06417	0.07321	0.08110	0.08884	0.09643	0.10390	0.11123	37
24	0.10345	0.04874	0.05714	0.06430	0.07334	0.08123	0.08897	0.09656	0.10403	0.11135	36
25	0.10488	0.04887	0.05727	0.06443	0.07347	0.08136	0.08910	0.09668	0.10415	0.11147	35
26	0.10632	0.04901	0.05741	0.06456	0.07360	0.08149	0.08923	0.09681	0.10428	0.11159	34
27	0.10775	0.04914	0.05754	0.06469	0.07373	0.08162	0.08936	0.09693	0.10440	0.11171	33
28	0.10919	0.04928	0.05768	0.06482	0.07386	0.08175	0.08949	0.09706	0.10453	0.11184	32
29	0.11062	0.04941	0.05781	0.06495	0.07399	0.08188	0.08962	0.09719	0.10465	0.11196	31
30	0.11206	0.04955	0.05795	0.06508	0.07412	0.08201	0.08975	0.09731	0.10478	0.11208	30
31	0.11349	0.04968	0.05808	0.06521	0.07425	0.08214	0.08988	0.09744	0.10490	0.11220	29
32	0.11493	0.04982	0.05822	0.06534	0.07438	0.08227	0.09001	0.09757	0.10503	0.11232	28
33	0.11636	0.04995	0.05835	0.06547	0.07451	0.08240	0.09014	0.09769	0.10515	0.11244	27
34	0.11780	0.05009	0.05849	0.06560	0.07464	0.08253	0.09027	0.09781	0.10528	0.11256	26
35	0.11923	0.05022	0.05862	0.06573	0.07477	0.08266	0.09040	0.09794	0.10540	0.11268	25
36	0.12067	0.05036	0.05876	0.06586	0.07490	0.08279	0.09053	0.09807	0.10553	0.11280	24
37	0.12210	0.05049	0.05889	0.06599	0.07503	0.08292	0.09066	0.09819	0.10565	0.11292	23
38	0.12354	0.05063	0.05903	0.06612	0.07516	0.08305	0.09079	0.09831	0.10578	0.11304	22
39	0.12497	0.05076	0.05916	0.06625	0.07529	0.08318	0.09092	0.09844	0.10590	0.11316	21
40	0.12641	0.05090	0.05930	0.06638	0.07542	0.08331	0.09105	0.09857	0.10603	0.11328	20
41	0.12784	0.05103	0.05943	0.06651	0.07555	0.08344	0.09118	0.09869	0.10615	0.11340	19
42	0.12928	0.05117	0.05957	0.06664	0.07568	0.08357	0.09131	0.09882	0.10628	0.11352	18
43	0.13071	0.05130	0.05970	0.06677	0.07581	0.08370	0.09144	0.09895	0.10640	0.11364	17
44	0.13215	0.05144	0.05984	0.06690	0.07594	0.08383	0.09157	0.09908	0.10653	0.11376	16
45	0.13358	0.05157	0.05997	0.06703	0.07607	0.08396	0.09170	0.09921	0.10665	0.11388	15
46	0.13502	0.05171	0.06011	0.06716	0.07620	0.08409	0.09183	0.09934	0.10678	0.11400	14
47	0.13645	0.05184	0.06024	0.06729	0.07633	0.08422	0.09196	0.09947	0.10690	0.11412	13
48	0.13789	0.05198	0.06038	0.06742	0.07646	0.08435	0.09209	0.09960	0.10703	0.11424	12
49	0.13932	0.05211	0.06051	0.06755	0.07659	0.08448	0.09222	0.09973	0.10715	0.11436	11
50	0.14076	0.05225	0.06065	0.06768	0.07672	0.08461	0.09235	0.09986	0.10728	0.11448	10
51	0.14219	0.05238	0.06078	0.06781	0.07685	0.08474	0.09248	0.09999	0.10740	0.11460	9
52	0.14363	0.05252	0.06092	0.06794	0.07698	0.08487	0.09261	0.10012	0.10753	0.11472	8
53	0.14506	0.05265	0.06105	0.06807	0.07711	0.08500	0.09274	0.10025	0.10765	0.11484	7
54	0.14650	0.05279	0.06119	0.06820	0.07724	0.08513	0.09287	0.10038	0.10778	0.11496	6
55	0.14793	0.05292	0.06132	0.06833	0.07737	0.08526	0.09300	0.10051	0.10790	0.11508	5
56	0.14937	0.05306	0.06146	0.06846	0.07750	0.08539	0.09313	0.10064	0.10803	0.11520	4
57	0.15080	0.05319	0.06159	0.06859	0.07763	0.08552	0.09326	0.10077	0.10815	0.11532	3
58	0.15224	0.05333	0.06173	0.06872	0.07776	0.08565	0.09339	0.10090	0.10828	0.11544	2
59	0.15367	0.05346	0.06186	0.06885	0.07789	0.08578	0.09352	0.10103	0.10840	0.11556	1
60	0.15511	0.05360	0.06200	0.06898	0.07802	0.08591	0.09365	0.10116	0.10853	0.11568	0

23 HOUR.

220

23 HOUR.

1 Hour.

 $\frac{1}{2}$ Log. Havermine. (2)

1 Hour.

		0"	4"	8"	12"	16"	20"	24"	28"	32"		
Time	Arc	15°	16°	17°	18°	19°	20°	21°	22°	23°	Time	Arc
0 0	0	4.115698	4.141555	4.169702	4.194332	4.217609	4.239670	4.260633	4.280599	4.299655	0 2	0
0 2	0	4.115937	4.141780	4.169913	4.194532	4.217798	4.239849	4.260803	4.280761	4.299810	0 4	0
0 4	0	4.116177	4.142004	4.170124	4.194731	4.217986	4.240038	4.260974	4.280924	4.299966	0 6	0
0 6	1	4.116417	4.142229	4.170336	4.194930	4.218175	4.240207	4.261144	4.281086	4.300121	0 8	1
0 8	2	4.116656	4.142453	4.170546	4.195139	4.218363	4.240386	4.261314	4.281248	4.300276	0 10	2
0 10	3	4.116895	4.142677	4.170757	4.195328	4.218551	4.240565	4.261484	4.281410	4.300431	0 12	3
0 12	3	4.117135	4.142901	4.170968	4.195527	4.218740	4.240744	4.261654	4.281573	4.300586	0 14	3
0 14	3	4.117374	4.143125	4.171179	4.195726	4.218928	4.240922	4.261824	4.281735	4.300740	0 16	4
0 16	4	4.117612	4.143349	4.171389	4.195925	4.219116	4.241101	4.261994	4.281897	4.300895	0 18	4
0 18	4	4.117851	4.143573	4.171600	4.196123	4.219304	4.241279	4.262164	4.282059	4.301050	0 20	5
0 20	5	4.118090	4.143797	4.171810	4.196322	4.219492	4.241458	4.262334	4.282220	4.301205	0 22	5
0 22	5	4.118328	4.144020	4.172020	4.196520	4.219680	4.241636	4.262503	4.282382	4.301359	0 24	6
0 24	6	4.118567	4.144244	4.172230	4.196719	4.219868	4.241814	4.262673	4.282544	4.301514	0 26	6
0 26	6	4.118805	4.144467	4.172440	4.196917	4.220056	4.241992	4.262842	4.282706	4.301668	0 28	7
0 28	7	4.119043	4.144690	4.172650	4.197115	4.220243	4.242170	4.263012	4.282867	4.301823	0 30	7
0 30	7	4.119281	4.144913	4.172860	4.197313	4.220431	4.242348	4.263181	4.283029	4.301977	0 32	8
0 32	8	4.119519	4.145136	4.173070	4.197511	4.220618	4.242526	4.263351	4.283190	4.302132	0 34	8
0 34	8	4.119756	4.145359	4.173279	4.197709	4.220805	4.242704	4.263520	4.283352	4.302286	0 36	9
0 36	9	4.119994	4.145581	4.173489	4.197907	4.220993	4.242882	4.263689	4.283513	4.302440	0 38	9
0 38	9	4.120231	4.145804	4.173698	4.198104	4.221180	4.243060	4.263858	4.283675	4.302594	0 40	10
0 40	10	4.120469	4.146026	4.173908	4.198302	4.221367	4.243237	4.264027	4.283836	4.302748	0 42	10
0 42	10	4.120706	4.146248	4.174117	4.198499	4.221554	4.243415	4.264196	4.283997	4.302903	0 44	11
0 44	11	4.120943	4.146471	4.174326	4.198697	4.221741	4.243592	4.264365	4.284158	4.303057	0 46	11
0 46	11	4.121180	4.146695	4.174535	4.198894	4.221928	4.243770	4.264534	4.284319	4.303210	0 48	12
0 48	12	4.121417	4.146915	4.174744	4.199091	4.222115	4.243947	4.264703	4.284480	4.303364	0 50	12
0 50	12	4.121653	4.147137	4.174953	4.199288	4.222301	4.244124	4.264872	4.284641	4.303518	0 52	13
0 52	13	4.121890	4.147358	4.175161	4.199485	4.222488	4.244302	4.265040	4.284802	4.303672	0 54	13
0 54	13	4.122126	4.147580	4.175370	4.199682	4.222674	4.244479	4.265209	4.284963	4.303826	0 56	14
0 56	14	4.122362	4.147801	4.175578	4.199879	4.222861	4.244656	4.265377	4.285124	4.303979	0 58	14
0 58	14	4.122598	4.148023	4.175787	4.200076	4.223047	4.244833	4.265546	4.285284	4.304132	1 0	15
1 0	15	4.122834	4.148244	4.175995	4.200273	4.223234	4.245010	4.265714	4.285445	4.304286	1 2	15
1 2	15	4.123070	4.148465	4.176203	4.200469	4.223420	4.245186	4.265883	4.285606	4.304440	1 4	16
1 4	16	4.123306	4.148686	4.176411	4.200666	4.223606	4.245363	4.266051	4.285766	4.304593	1 6	16
1 6	16	4.123542	4.148907	4.176619	4.200862	4.223792	4.245540	4.266219	4.285927	4.304747	1 8	17
1 8	17	4.123777	4.149128	4.176827	4.201059	4.223978	4.245716	4.266387	4.286087	4.304900	1 10	17
1 10	17	4.124012	4.149349	4.177035	4.201255	4.224164	4.245893	4.266555	4.286247	4.305053	1 12	18
1 12	18	4.124248	4.149569	4.177242	4.201451	4.224349	4.246069	4.266723	4.286408	4.305207	1 14	18
1 14	18	4.124483	4.149790	4.177450	4.201647	4.224535	4.246246	4.266891	4.286568	4.305360	1 16	19
1 16	19	4.124718	4.150010	4.177657	4.201843	4.224721	4.246422	4.267059	4.286728	4.305513	1 18	19
1 18	19	4.124952	4.150230	4.177865	4.202039	4.224906	4.246598	4.267227	4.286888	4.305666	1 20	20
1 20	20	4.125187	4.150451	4.178072	4.202234	4.225092	4.246775	4.267394	4.287048	4.305819	1 22	20
1 22	20	4.125422	4.150671	4.178279	4.202430	4.225277	4.246951	4.267562	4.287208	4.305972	1 24	21
1 24	21	4.125656	4.150891	4.178486	4.202626	4.225462	4.247127	4.267730	4.287368	4.306125	1 26	21
1 26	21	4.125890	4.151110	4.178693	4.202821	4.225648	4.247303	4.267897	4.287528	4.306277	1 28	22
1 28	22	4.126125	4.151330	4.178900	4.203017	4.225833	4.247478	4.268065	4.287687	4.306430	1 30	22
1 30	22	4.126359	4.151550	4.179107	4.203212	4.226018	4.247654	4.268232	4.287847	4.306583	1 32	23
1 32	23	4.126593	4.151769	4.179313	4.203407	4.226203	4.247830	4.268399	4.288007	4.306736	1 34	23
1 34	23	4.126826	4.151988	4.179520	4.203602	4.226388	4.248006	4.268567	4.288166	4.306888	1 36	24
1 36	24	4.127060	4.152208	4.179726	4.203797	4.226572	4.248181	4.268734	4.288326	4.307041	1 38	24
1 38	24	4.127294	4.152427	4.179933	4.203992	4.226757	4.248357	4.268901	4.288485	4.307193	1 40	25
1 40	25	4.127527	4.152646	4.180139	4.204187	4.226942	4.248532	4.269068	4.288645	4.307346	1 42	25
1 42	25	4.127760	4.152865	4.180345	4.204382	4.227126	4.248707	4.269235	4.288804	4.307498	1 44	26
1 44	26	4.127993	4.153083	4.180551	4.204577	4.227311	4.248883	4.269403	4.288964	4.307650	1 46	26
1 46	26	4.128226	4.153302	4.180757	4.204771	4.227495	4.249058	4.269569	4.289123	4.307803	1 48	27
1 48	27	4.128459	4.153521	4.180963	4.204966	4.227680	4.249233	4.269735	4.289283	4.307955	1 50	27
1 50	27	4.128692	4.153739	4.181169	4.205160	4.227864	4.249408	4.269902	4.289441	4.308107	1 52	28
1 52	28	4.128925	4.153957	4.181374	4.205354	4.228048	4.249583	4.270069	4.289600	4.308259	1 54	28
1 54	28	4.129157	4.154176	4.181580	4.205549	4.228232	4.249758	4.270235	4.289759	4.308411	1 56	29
1 56	29	4.129390	4.154394	4.181785	4.205743	4.228416	4.249933	4.270402	4.289918	4.308563	1 58	29
1 58	29	4.129622	4.154612	4.181991	4.205937	4.228600	4.250107	4.270568	4.290077	4.308715	2 0	30
2 0	30	4.129854	4.154830	4.182196	4.206131	4.228784	4.250282	4.270735	4.290236	4.308867	2 2	30
2 2	30	4.130086	4.155048	4.182401	4.206325	4.228968	4.250457	4.270901	4.290395	4.309019	2 4	31
2 4	31	4.130318	4.155266	4.182606	4.206519	4.229152	4.250632	4.271068	4.290554	4.309171	2 6	31
2 6	31	4.130550	4.155484	4.182811	4.206713	4.229336	4.250807	4.271234	4.290713	4.309323	2 8	32
2 8	32	4.130782	4.155702	4.183016	4.206907	4.229520	4.250982	4.271401	4.290872	4.309475	2 10	32
2 10	32	4.131014	4.155920	4.183221	4.207101	4.229704	4.251157	4.271567	4.291031	4.309627	2 12	33
2 12	33	4.131246	4.156138	4.183426	4.207295	4.229888	4.251332	4.271734	4.291190	4.309779	2 14	33
2 14	33	4.131478	4.156356	4.183631	4.207489	4.230072	4.251507	4.271900	4.291349	4.309931	2 16	34
2 16	34	4.131710	4.156574	4.183836	4.207683	4.230256	4.251682	4.272067	4.291508	4.310083	2 18	34
2 18	34	4.131942	4.156792	4.184041	4.207877	4.230440	4.251857	4.272233	4.291667	4.310235	2 20	35
2 20	35	4.132174	4.157010	4.184246	4.208071	4.230624	4.252032	4.272400	4.291826	4.310387	2 22	35
2 22	35	4.132406	4.157228	4.184451	4.208265	4.230808	4.252207	4.272566	4.291985	4.310539	2 24	36
2 24	36	4.132638	4.157446	4.184656	4.208459	4.230992	4.252382	4.272733	4.292144	4.310691	2 26	36
2 26	36	4.132870	4.157664	4.184861	4.208653	4.231176	4.252557	4.272899	4.292303	4.310843	2 28	37
2 28	37	4.133102	4.157882	4.185066	4.208847	4.231360	4.252732	4.273066	4.292462	4.310995	2 30	37
2 30	37	4.133334	4.158100	4.185271	4.209041	4.231544	4.252907	4.273232	4.292621	4.311147	2 32	38
2 32	38	4.133566	4.158318	4.185476	4.209235	4.231728	4.253082	4.273399	4.292780	4.311299	2 34	38
2 34	38	4.133798	4.158536	4.185681	4.209429	4.231912	4.253257	4.273565	4.292939	4.311451	2 36	39
2 36	39	4.134030	4.158754	4.185886	4.209623	4.232096	4.253432					

1 Hour.

Log. Haverham (6)

1 Hour.

		2 ^m	6 ^m	10 ^m	14 ^m	18 ^m	22 ^m	26 ^m	30 ^m	34 ^m		
Time	Area	15° 30'	16° 30'	17° 30'	18° 30'	19° 30'	20° 30'	21° 30'	22° 30'	23° 30'	Time	Area
0 00	0	4.129854	4.156830	4.183106	4.206131	4.228784	4.250282	4.270735	4.290236	4.308867	0 30	0
0 30	0	4.130086	4.157047	4.183221	4.206125	4.228968	4.250457	4.270901	4.290394	4.309019	3 30	0
0 45	0	4.130318	4.157265	4.183406	4.206519	4.229151	4.250631	4.271067	4.290553	4.309170	4 00	0
0 50	0	4.130550	4.157482	4.183581	4.206712	4.229335	4.250806	4.271234	4.290712	4.309322	4 30	0
0 52	0	4.130781	4.157700	4.183766	4.206906	4.229518	4.250980	4.271400	4.290870	4.309474	5 00	0
0 53	0	4.131013	4.157917	4.183941	4.207099	4.229702	4.251155	4.271566	4.291029	4.309625	5 30	0
0 54	0	4.131244	4.158134	4.184125	4.207293	4.229885	4.251329	4.271731	4.291187	4.309777	6 00	0
0 55	0	4.131475	4.158352	4.184310	4.207486	4.230069	4.251503	4.271898	4.291346	4.309928	6 30	0
0 56	0	4.131706	4.158569	4.184494	4.207679	4.230252	4.251677	4.272063	4.291504	4.310080	7 00	0
0 57	0	4.131937	4.158786	4.184679	4.207873	4.230435	4.251851	4.272229	4.291662	4.310231	7 30	0
0 58	0	4.132168	4.159002	4.184863	4.208066	4.230618	4.252025	4.272395	4.291820	4.310382	8 00	0
0 59	0	4.132399	4.159219	4.185047	4.208259	4.230801	4.252199	4.272561	4.291979	4.310534	8 30	0
0 59	0	4.132630	4.159435	4.185231	4.208452	4.230984	4.252373	4.272726	4.292137	4.310685	9 00	0
0 59	0	4.132860	4.159652	4.185415	4.208644	4.231167	4.252547	4.272892	4.292295	4.310836	9 30	0
0 59	0	4.133091	4.159868	4.185599	4.208837	4.231349	4.252720	4.273057	4.292453	4.310987	10 00	0
0 59	0	4.133321	4.160084	4.185783	4.209030	4.231532	4.252894	4.273223	4.292611	4.311138	10 30	0
0 59	0	4.133551	4.160300	4.185966	4.209222	4.231714	4.253067	4.273388	4.292768	4.311289	11 00	0
0 59	0	4.133781	4.160516	4.186150	4.209415	4.231897	4.253241	4.273553	4.292925	4.311440	11 30	0
0 59	0	4.134011	4.160732	4.186333	4.209607	4.232079	4.253414	4.273718	4.293084	4.311591	12 00	0
0 59	0	4.134241	4.160948	4.186517	4.209799	4.232261	4.253588	4.273884	4.293242	4.311742	12 30	0
0 59	0	4.134470	4.161164	4.186700	4.209992	4.232444	4.253761	4.274049	4.293399	4.311893	13 00	0
0 59	0	4.134700	4.161379	4.186884	4.210184	4.232626	4.253934	4.274214	4.293557	4.312043	13 30	0
0 59	0	4.134929	4.161595	4.187068	4.210376	4.232808	4.254107	4.274379	4.293714	4.312194	14 00	0
0 59	0	4.135158	4.161810	4.187251	4.210568	4.232990	4.254280	4.274543	4.293872	4.312345	14 30	0
0 59	0	4.135387	4.162025	4.187435	4.210760	4.233172	4.254453	4.274708	4.294029	4.312495	15 00	0
0 59	0	4.135616	4.162241	4.187618	4.210951	4.233354	4.254626	4.274873	4.294186	4.312646	15 30	0
0 59	0	4.135845	4.162456	4.187802	4.211143	4.233536	4.254799	4.275038	4.294344	4.312796	16 00	0
0 59	0	4.136074	4.162670	4.187985	4.211335	4.233718	4.254972	4.275202	4.294501	4.312946	16 30	0
0 59	0	4.136303	4.162885	4.188168	4.211526	4.233899	4.255144	4.275367	4.294658	4.313097	17 00	0
0 59	0	4.136531	4.163100	4.188351	4.211718	4.234081	4.255317	4.275531	4.294815	4.313247	17 30	0
0 59	0	4.136760	4.163315	4.188534	4.211909	4.234263	4.255489	4.275696	4.294972	4.313397	18 00	0
0 59	0	4.136988	4.163529	4.188717	4.212100	4.234444	4.255662	4.275860	4.295129	4.313547	18 30	0
0 59	0	4.137216	4.163743	4.188900	4.212291	4.234626	4.255834	4.276024	4.295286	4.313698	19 00	0
0 59	0	4.137444	4.163958	4.189082	4.212482	4.234808	4.256007	4.276189	4.295443	4.313848	19 30	0
0 59	0	4.137672	4.164172	4.189265	4.212673	4.234989	4.256179	4.276353	4.295600	4.313998	20 00	0
0 59	0	4.137900	4.164386	4.189447	4.212864	4.235171	4.256351	4.276517	4.295756	4.314148	20 30	0
0 59	0	4.138127	4.164600	4.189630	4.213055	4.235353	4.256523	4.276681	4.295912	4.314297	21 00	0
0 59	0	4.138355	4.164814	4.189812	4.213246	4.235535	4.256695	4.276845	4.296070	4.314447	21 30	0
0 59	0	4.138582	4.165027	4.190000	4.213437	4.235717	4.256867	4.277009	4.296226	4.314597	22 00	0
0 59	0	4.138810	4.165241	4.190188	4.213627	4.235899	4.257039	4.277173	4.296383	4.314747	22 30	0
0 59	0	4.139037	4.165454	4.190376	4.213818	4.236081	4.257211	4.277337	4.296539	4.314896	23 00	0
0 59	0	4.139264	4.165668	4.190564	4.214008	4.236263	4.257383	4.277500	4.296695	4.315046	23 30	0
0 59	0	4.139491	4.165881	4.190752	4.214198	4.236444	4.257554	4.277664	4.296852	4.315196	24 00	0
0 59	0	4.139718	4.166094	4.190940	4.214389	4.236626	4.257726	4.277827	4.297008	4.315345	24 30	0
0 59	0	4.139944	4.166307	4.191128	4.214579	4.236808	4.257898	4.277991	4.297164	4.315495	25 00	0
0 59	0	4.140171	4.166520	4.191316	4.214769	4.236990	4.258069	4.278154	4.297320	4.315644	25 30	0
0 59	0	4.140397	4.166733	4.191504	4.214959	4.237171	4.258241	4.278318	4.297476	4.315793	26 00	0
0 59	0	4.140624	4.166946	4.191692	4.215149	4.237353	4.258412	4.278481	4.297632	4.315943	26 30	0
0 59	0	4.140850	4.167159	4.191880	4.215338	4.237535	4.258583	4.278644	4.297788	4.316092	27 00	0
0 59	0	4.141076	4.167371	4.192068	4.215528	4.237717	4.258754	4.278808	4.297944	4.316241	27 30	0
0 59	0	4.141302	4.167584	4.192256	4.215718	4.237899	4.258925	4.278971	4.298100	4.316390	28 00	0
0 59	0	4.141528	4.167796	4.192444	4.215907	4.238081	4.259097	4.279134	4.298256	4.316539	28 30	0
0 59	0	4.141754	4.168008	4.192632	4.216097	4.238263	4.259268	4.279297	4.298412	4.316688	29 00	0
0 59	0	4.141979	4.168220	4.192820	4.216286	4.238445	4.259439	4.279460	4.298567	4.316837	29 30	0
0 59	0	4.142205	4.168432	4.193008	4.216475	4.238627	4.259609	4.279623	4.298723	4.316986	30 00	0
0 59	0	4.142430	4.168644	4.193196	4.216664	4.238809	4.259780	4.279786	4.298878	4.317135	30 30	0
0 59	0	4.142655	4.168856	4.193384	4.216854	4.238991	4.259951	4.279948	4.299034	4.317284	31 00	0
0 59	0	4.142881	4.169068	4.193572	4.217043	4.239173	4.260121	4.280111	4.299189	4.317433	31 30	0
0 59	0	4.143106	4.169279	4.193760	4.217232	4.239355	4.260292	4.280274	4.299345	4.317582	32 00	0
0 59	0	4.143330	4.169491	4.193948	4.217420	4.239537	4.260463	4.280436	4.299500	4.317730	32 30	0
0 59	0	4.143555	4.169702	4.194136	4.217609	4.239719	4.260633	4.280599	4.299655	4.317879	33 00	0
0 59	0	4.143779	4.169914	4.194324	4.217797	4.239901	4.260804	4.280761	4.299810	4.318028	33 30	0
0 59	0	4.144003	4.170126	4.194512	4.217985	4.240083	4.260975	4.280923	4.300000	4.318177	34 00	0
0 59	0	4.144227	4.170338	4.194700	4.218173	4.240265	4.261146	4.281085	4.300189	4.318326	34 30	0
0 59	0	4.144451	4.170550	4.194888	4.218361	4.240447	4.261317	4.281247	4.300378	4.318475	35 00	0
0 59	0	4.144675	4.170762	4.195076	4.218549	4.240629	4.261488	4.281409	4.300567	4.318624	35 30	0
0 59	0	4.144899	4.170974	4.195264	4.218737	4.240811	4.261659	4.281571	4.300756	4.318773	36 00	0
0 59	0	4.145123	4.171186	4.195452	4.218925	4.240993	4.261830	4.281733	4.300945	4.318922	36 30	0
0 59	0	4.145347	4.171398	4.195640	4.219113	4.241175	4.262001	4.281895	4.301134	4.319071	37 00	0
0 59	0	4.145571	4.171610	4.195828	4.219301	4.241357	4.262172	4.282057	4.301323	4.319220	37 30	0
0 59	0	4.145795	4.171822	4.196016	4.219489	4.241539	4.262343	4.282219	4.301512	4.319369	38 00	0
0 59	0	4.146019	4.172034	4.196204	4.219677	4.241721	4.262514	4.282381	4.301701	4.319518	38 30	0
0 59	0	4.146243	4.172246	4.196392	4.219865	4.241903	4.262685	4.282543	4.301890	4.319667	39 00	0
0 59	0	4.146467	4.172458	4.196580	4.220053	4.242085	4.262856	4.282705	4.302079	4.319816	39 30	0
0 59	0	4.146691	4.172670	4.196768	4.220241	4.242267	4.263027	4.282867	4.302268	4.320000	40 00	0
0 59	0	4.146915	4.172882	4.196956	4.220429	4.242449	4.263198	4.283029	4.302457	4.320189	40 30	0
0 59	0	4.147139	4.173094	4.197144	4.220617	4.242631	4.263369	4.283191	4.302646	4.320378	41 00	0
0 59	0	4.147363	4.173306	4.197332	4.220805	4.242813	4.263540	4.283353	4.302835	4.320567	41 30	0
0 59	0	4.147587	4.173518	4.197520								

2 House

21 Boston

1 Hour

Log. Haversines. (5)

2 Hours

Time	Arc	38"	42"	46"	50"	54"	58"	2° 2'	6"	10"	Time
		24° 30'	25° 30'	26° 30'	27° 30'	28° 30'	29° 30'	30° 30'	31° 30'	32° 30'	
0 0 30	0	4.336700	4.343797	4.350815	4.357803	4.364766	4.371692	4.378580	4.385427	4.392233	0 2
0 1 30	0	336845	343937	350949	357932	364885	371808	378692	385537	392343	58 1
0 2 30	0	336990	344076	351089	358032	364935	371845	378682	385499	392306	56 1
0 3 30	0	337135	344216	351217	358139	364990	371875	378688	385461	392218	54 1
0 4 30	0	337281	4.344355	4.350751	4.357519	4.364703	4.371341	4.377847	4.384322	4.390736	52 1
0 5 30	0	337426	344495	350885	357668	364827	371641	378386	385043	391700	50 1
0 6 30	0	337571	344634	351019	357777	364951	371781	378481	385082	391741	48 1
0 7 30	0	337717	344773	351253	357906	364975	371807	378461	385017	391785	46 1
0 8 30	0	337862	4.344912	4.351287	4.357703	4.364299	4.370986	4.377654	4.384312	4.390959	44 1
0 9 30	0	338007	345052	351422	358163	365233	371940	378640	385287	391934	42 1
0 10 30	0	338152	345191	351551	358292	365347	372047	378747	385394	392039	40 1
0 11 30	0	338297	345330	351688	358429	365471	372149	378849	385530	392140	38 1
0 12 30	0	338442	4.345469	4.351822	4.358259	4.364769	4.371261	4.377736	4.384191	4.390636	36 1
0 13 30	0	338586	345608	351955	358695	365819	372319	378943	385498	392183	34 1
0 14 30	0	338731	345747	352089	358829	365943	372415	379038	385593	392284	32 1
0 15 30	0	338876	345886	352222	358935	366077	372517	379140	385695	392385	30 1
0 16 30	0	339021	4.346024	4.352356	4.358703	4.365190	4.371717	4.378234	4.384741	4.391238	28 1
0 17 30	0	339165	346163	352489	359229	366334	372814	379437	385944	392489	26 1
0 18 30	0	339310	346302	352623	359363	366468	372916	379539	386046	392590	24 1
0 19 30	0	339454	346441	352756	359498	366602	373018	379641	386147	392691	22 1
0 20 30	0	339599	4.346579	4.352889	4.359257	4.365685	4.372163	4.378631	4.385088	4.391535	20 1
0 21 30	0	339743	346718	353022	359763	366819	373165	379788	386295	392836	18 1
0 22 30	0	339887	346857	353156	359898	366953	373267	379890	386422	392937	16 1
0 23 30	0	339932	346995	353289	359961	367086	373369	379992	386549	393038	14 1
0 24 30	0	340076	4.347134	4.353422	4.359789	4.366179	4.372611	4.379033	4.385445	4.391847	12 1
0 25 30	0	340220	347272	353555	359927	367233	373733	380356	386968	393148	10 1
0 26 30	0	340364	347411	353688	359945	367346	373838	380461	387073	393249	8 1
0 27 30	0	340508	347549	353821	359947	367450	373943	380565	387177	393350	6 1
0 28 30	0	340652	4.347687	4.353954	4.359901	4.365873	4.371873	4.377863	4.383843	4.389813	4 1
0 29 30	0	340796	347825	354087	359929	367572	374019	380619	387219	393450	2 1
0 30 30	0	340940	347963	354220	359971	367685	374124	380724	387324	393551	0 1
0 31 30	0	341084	348102	354352	359985	367789	374229	380829	387429	393652	58 0
0 32 30	0	341228	4.348240	4.354485	4.360113	4.365766	4.371453	4.377131	4.382808	4.388475	56 0
0 33 30	0	341372	348378	354618	360241	365894	371581	377269	382956	388643	54 0
0 34 30	0	341516	348516	354751	360368	366021	371708	377395	383082	388769	52 0
0 35 30	0	341660	348654	354883	360496	366153	371813	377500	383187	388875	50 0
0 36 30	0	341804	4.348792	4.355016	4.360624	4.366268	4.371931	4.377584	4.383237	4.388889	48 0
0 37 30	0	341948	348930	354948	360751	366494	372176	377859	383542	389225	46 0
0 38 30	0	342092	349067	355081	360879	366627	372279	377962	383645	389328	44 0
0 39 30	0	342236	349205	355213	361006	366760	372381	378064	383747	389430	42 0
0 40 30	0	342380	4.349343	4.355546	4.361134	4.366750	4.372382	4.377994	4.383606	4.389218	40 0
0 41 30	0	342524	349481	355678	361261	366893	372484	378167	383850	389532	38 0
0 42 30	0	342668	349618	355810	361389	367021	372586	378269	383952	389634	36 0
0 43 30	0	342812	349756	355943	361516	367154	372688	378371	384054	389736	34 0
0 44 30	0	342956	4.349893	4.356075	4.361643	4.367231	4.372824	4.378416	4.384008	4.389599	32 0
0 45 30	0	343100	350031	356207	361771	367364	372957	378549	384141	389733	30 0
0 46 30	0	343244	350168	356339	361898	367491	373080	378672	384264	389856	28 0
0 47 30	0	343388	350306	356471	362025	367618	373182	378774	384366	389958	26 0
0 48 30	0	343532	4.350492	4.356604	4.362152	4.367721	4.373290	4.378859	4.384428	4.389997	24 0
0 49 30	0	343676	350630	356636	362279	367872	373471	379063	384655	390247	22 0
0 50 30	0	343820	350768	356768	362406	368000	373573	379165	384757	390349	20 0
0 51 30	0	343964	350905	356900	362533	368127	373675	379267	384859	390451	18 0
0 52 30	0	344108	4.351195	4.357292	4.363373	4.369454	4.375535	4.381616	4.387697	4.393778	16 0
0 53 30	0	344252	351329	357263	362707	368291	373884	379476	385068	390660	14 0
0 54 30	0	344396	351466	357395	362834	368418	374011	379603	385195	390782	12 0
0 55 30	0	344540	351603	357527	362961	368545	374113	379705	385297	390884	10 0
0 56 30	0	344684	4.351840	4.357929	4.364000	4.370071	4.376142	4.382213	4.388284	4.394355	8 0
0 57 30	0	344828	351977	357690	363095	368679	374286	379878	385469	391061	6 0
0 58 30	0	344972	352114	357824	363222	368806	374388	379979	385570	391163	4 0
0 59 30	0	345116	352251	357954	363349	368933	374490	380081	385672	391265	2 0
0 60 30	0	345260	4.352488	4.358568	4.364635	4.370702	4.376769	4.382836	4.388903	4.394969	0 0
1 0 30	0	345404	352625	358185	363475	369059	374651	380242	385833	391424	58 0
1 1 30	0	345548	4.352816	4.358886	4.364953	4.371020	4.377087	4.383154	4.389221	4.395288	56 0
1 2 30	0	345692	352962	358522	363604	369188	374780	380371	385962	391553	54 0
1 3 30	0	345836	353099	358659	363731	369315	374882	380473	386064	391655	52 0
1 4 30	0	345980	4.353144	4.359214	4.365281	4.371348	4.377415	4.383482	4.389549	4.395616	50 0
1 5 30	0	346124	353281	358841	363858	369442	374984	380575	386166	391757	48 0
1 6 30	0	346268	353418	358978	363985	369569	375086	380677	386268	391859	46 0
1 7 30	0	346412	4.353432	4.359502	4.365569	4.371636	4.377703	4.383770	4.389837	4.395904	44 0
1 8 30	0	346556	353555	359115	364132	369716	375258	380849	386440	392031	42 0
1 9 30	0	346700	353692	359252	364259	369843	375390	380981	386572	392133	40 0
1 10 30	0	346844	4.353720	4.359790	4.365857	4.371924	4.377991	4.384058	4.390125	4.396192	38 0
1 11 30	0	346988	353829	359389	364386	369970	375522	381113	386704	392295	36 0
1 12 30	0	347132	353966	359526	364513	370097	375639	381230	386821	392397	34 0
1 13 30	0	347276	4.354008	4.360078	4.366145	4.372212	4.378279	4.384346	4.390413	4.396480	32 0
1 14 30	0	347420	354145	359705	364640	370224	375766	381357	386948	392539	30 0
1 15 30	0	347564	354282	359842	364767	370351	375893	381484	387075	392641	28 0
1 16 30	0	347708	4.354336	4.360406	4.366473	4.372540	4.378607	4.384674	4.390741	4.396808	26 0
1 17 30	0	347852	354473	360033	364894	370478	376020	381611	387202	392743	24 0
1 18 30	0	347996	354610	360170	365021	370605	376147	381738	387329	392845	22 0
1 19 30	0	348140	4.354624	4.360694	4.366761	4.372828	4.378895	4.384962	4.391029	4.397096	20 0
1 20 30	0	348284	354747	360307	365158	370742	376284	381875	387466	393047	18 0
1 21 30	0	348428	354884	360444	365295	370886	376428	382019	387610	393149	16 0
1 22 30	0	348572	4.354960	4.361030	4.367097	4.373164	4.379231	4.385298	4.391365	4.397432	14 0
1 23 30	0	348716	355099	360581	365432	371016	376558	382149	387740	393351	12 0
1 24 30	0	348860	355236	360718	365569	371159	376701	382292	387883	393453	10 0
1 25 30	0	348954	4.355232	4.361302	4.367369	4.373436	4.379503	4.385570	4.391637	4.397704	8 0
1 26 30	0	349098	355369	360855	365706	371300	376842	382433	388024	393555	6 0
1 27 30	0	349242	355506	360992	365843	371443	376985	382576	388167	393657	4 0
1 28 30	0	349386	4.355520	4.361590	4.367657	4.373724	4.379791	4.385858	4.391925	4.397992	2 0
1 29 30	0	349530	355637	361129	365980	371584	377126	382717	38		

How

202

21 House.

2 Hours.

Log. Haversines. (6)

2 Hours.

Time m	Arc. p	12 ^m	16 ^m	20 ^m	24 ^m	28 ^m	32 ^m	36 ^m	40 ^m	44 ^m	Time m
		33°	34°	35°	36°	37°	38°	39°	40°	41°	
0	0	4.453342	4.465935	4.478142	4.489982	4.501476	4.512642	4.523495	4.534052	4.544325	0
0	2	4.453448	4.466039	4.478242	4.490080	4.501571	4.512734	4.523584	4.534138	4.544410	2
0	4	4.453555	4.466142	4.478342	4.490177	4.501665	4.512825	4.523674	4.534225	4.544495	4
0	6	4.453661	4.466245	4.478442	4.490274	4.501759	4.512917	4.523763	4.534312	4.544579	6
0	8	4.453768	4.466348	4.478542	4.490371	4.501854	4.513009	4.523852	4.534399	4.544663	8
0	10	4.453875	4.466451	4.478642	4.490468	4.501948	4.513100	4.523941	4.534485	4.544750	10
0	12	4.453981	4.466555	4.478742	4.490565	4.502042	4.513192	4.524030	4.534572	4.544832	12
0	14	4.454087	4.466658	4.478842	4.490662	4.502137	4.513283	4.524119	4.534659	4.544916	14
0	16	4.454194	4.466761	4.478942	4.490759	4.502231	4.513375	4.524208	4.534745	4.545000	16
0	18	4.454300	4.466864	4.479042	4.490856	4.502325	4.513466	4.524297	4.534832	4.545085	18
0	20	4.454407	4.466967	4.479142	4.490953	4.502419	4.513558	4.524386	4.534918	4.545169	20
0	22	4.454513	4.467070	4.479242	4.491050	4.502513	4.513650	4.524475	4.535005	4.545253	22
0	24	4.454619	4.467173	4.479342	4.491147	4.502607	4.513741	4.524564	4.535091	4.545338	24
0	26	4.454725	4.467276	4.479442	4.491244	4.502702	4.513832	4.524653	4.535178	4.545422	26
0	28	4.454831	4.467379	4.479542	4.491341	4.502796	4.513924	4.524742	4.535265	4.545505	28
0	30	4.454938	4.467482	4.479642	4.491438	4.502890	4.514015	4.524831	4.535351	4.545590	30
0	32	4.455044	4.467585	4.479741	4.491534	4.502984	4.514107	4.524920	4.535437	4.545674	32
0	34	4.455150	4.467688	4.479841	4.491631	4.503078	4.514198	4.525008	4.535524	4.545759	34
0	36	4.455256	4.467790	4.479941	4.491728	4.503172	4.514289	4.525097	4.535610	4.545843	36
0	38	4.455362	4.467893	4.480040	4.491825	4.503266	4.514381	4.525186	4.535697	4.545927	38
0	40	4.455469	4.467996	4.480140	4.491922	4.503360	4.514472	4.525275	4.535783	4.546011	40
0	42	4.455575	4.468099	4.480240	4.492018	4.503454	4.514563	4.525364	4.535870	4.546095	42
0	44	4.455681	4.468201	4.480339	4.492115	4.503547	4.514655	4.525452	4.535956	4.546179	44
0	46	4.455787	4.468304	4.480439	4.492212	4.503641	4.514746	4.525541	4.536042	4.546263	46
0	48	4.455893	4.468407	4.480538	4.492308	4.503735	4.514837	4.525630	4.536129	4.546347	48
0	50	4.455998	4.468509	4.480638	4.492405	4.503829	4.514928	4.525718	4.536215	4.546431	50
0	52	4.456104	4.468612	4.480738	4.492501	4.503923	4.515019	4.525807	4.536301	4.546515	52
0	54	4.456210	4.468715	4.480837	4.492598	4.504017	4.515111	4.525896	4.536387	4.546599	54
0	56	4.456316	4.468817	4.480937	4.492695	4.504110	4.515202	4.525984	4.536474	4.546683	56
0	58	4.456422	4.468920	4.481036	4.492791	4.504204	4.515293	4.526073	4.536560	4.546767	58
1	0	4.456528	4.469022	4.481135	4.492888	4.504298	4.515384	4.526162	4.536646	4.546851	0
1	2	4.456633	4.469125	4.481235	4.492984	4.504392	4.515475	4.526250	4.536732	4.546935	2
1	4	4.456739	4.469227	4.481334	4.493081	4.504485	4.515566	4.526339	4.536818	4.547019	4
1	6	4.456845	4.469330	4.481434	4.493177	4.504579	4.515657	4.526427	4.536904	4.547103	6
1	8	4.456951	4.469432	4.481533	4.493273	4.504673	4.515748	4.526516	4.536991	4.547187	8
1	10	4.457056	4.469535	4.481632	4.493370	4.504766	4.515839	4.526604	4.537077	4.547270	10
1	12	4.457162	4.469637	4.481731	4.493466	4.504860	4.515930	4.526693	4.537163	4.547354	12
1	14	4.457267	4.469739	4.481831	4.493562	4.504953	4.516021	4.526781	4.537249	4.547438	14
1	16	4.457373	4.469842	4.481930	4.493659	4.505047	4.516112	4.526870	4.537335	4.547522	16
1	18	4.457478	4.469944	4.482029	4.493755	4.505140	4.516203	4.526958	4.537421	4.547605	18
1	20	4.457584	4.470046	4.482128	4.493851	4.505234	4.516294	4.527046	4.537507	4.547689	20
1	22	4.457689	4.470148	4.482227	4.493947	4.505327	4.516384	4.527135	4.537593	4.547773	22
1	24	4.457795	4.470250	4.482327	4.494044	4.505421	4.516475	4.527223	4.537679	4.547857	24
1	26	4.457900	4.470353	4.482426	4.494140	4.505514	4.516566	4.527311	4.537765	4.547940	26
1	28	4.458006	4.470455	4.482525	4.494236	4.505608	4.516657	4.527400	4.537851	4.548024	28
1	30	4.458111	4.470557	4.482624	4.494332	4.505701	4.516748	4.527488	4.537937	4.548108	30
1	32	4.458216	4.470659	4.482723	4.494428	4.505794	4.516838	4.527576	4.538023	4.548191	32
1	34	4.458322	4.470761	4.482822	4.494524	4.505888	4.516929	4.527664	4.538108	4.548275	34
1	36	4.458427	4.470863	4.482921	4.494620	4.505981	4.517020	4.527753	4.538194	4.548358	36
1	38	4.458532	4.470965	4.483020	4.494717	4.506074	4.517110	4.527841	4.538280	4.548442	38
1	40	4.458638	4.471067	4.483119	4.494813	4.506168	4.517201	4.527929	4.538366	4.548526	40
1	42	4.458743	4.471169	4.483218	4.494909	4.506261	4.517292	4.528017	4.538452	4.548609	42
1	44	4.458848	4.471271	4.483316	4.495005	4.506354	4.517382	4.528105	4.538537	4.548693	44
1	46	4.458953	4.471373	4.483415	4.495100	4.506447	4.517473	4.528193	4.538623	4.548776	46
1	48	4.459058	4.471475	4.483514	4.495196	4.506541	4.517564	4.528281	4.538709	4.548860	48
1	50	4.459163	4.471577	4.483613	4.495292	4.506634	4.517654	4.528370	4.538795	4.548943	50
1	52	4.459268	4.471678	4.483713	4.495388	4.506727	4.517745	4.528458	4.538880	4.549027	52
1	54	4.459373	4.471780	4.483810	4.495484	4.506820	4.517835	4.528546	4.538966	4.549110	54
1	56	4.459478	4.471882	4.483909	4.495580	4.506913	4.517926	4.528634	4.539052	4.549193	56
1	58	4.459583	4.471984	4.484008	4.495676	4.507006	4.518016	4.528722	4.539137	4.549277	58
2	0	4.459688	4.472086	4.484107	4.495772	4.507099	4.518107	4.528810	4.539223	4.549360	0
2 Hours		46 ^m	42 ^m	38 ^m	34 ^m	30 ^m	26 ^m	22 ^m	18 ^m	14 ^m	Time

21 Hours.

21 Hours.

2 Hours.

Log. Haveraine. (1)

2 Hours.

		14"	18"	22"	26"	30"	34"	38"	42"	46"		
Time	Arg.	33° 30'	34° 30'	35° 30'	36° 30'	37° 30'	38° 30'	39° 30'	40° 30'	41° 30'	Time	Arg.
0 0 30	0	4.459688	4.472086	4.484107	4.495771	4.507099	4.518107	4.528810	4.539223	4.549436	0 1 30	0
0 1 30	30	459793	472187	484105	495867	507192	518197	528898	539309	549443	0 2 30	30
0 2 30	0	459898	472289	484304	495963	507285	518287	528986	539394	549527	0 3 30	0
0 3 30	30	460003	472391	484402	496059	507378	518378	529073	539480	549610	0 4 30	30
0 4 30	0	4.460108	4.472492	4.484501	4.496154	4.507471	4.518468	4.529161	4.539565	4.549693	0 5 30	0
0 5 30	30	460213	472594	484600	496250	507564	518559	529249	539651	549777	0 6 30	30
0 6 30	0	460317	472695	484698	496346	507657	518649	529337	539736	549860	0 7 30	0
0 7 30	30	460422	472797	484797	496441	507750	518739	529425	539822	549943	0 8 30	30
0 8 30	0	4.460527	4.472898	4.484895	4.496537	4.507843	4.518839	4.529513	4.539907	4.550026	0 9 30	0
0 9 30	30	460632	473000	484994	496633	507936	518920	529601	539993	550110	0 10 30	30
0 10 30	0	460736	473101	485092	496728	508028	519010	529688	540078	550193	0 11 30	0
0 11 30	30	460841	473203	485190	496824	508121	519100	529776	540163	550276	0 12 30	30
0 12 30	0	4.460946	4.473304	4.485289	4.496919	4.508214	4.519190	4.529864	4.540249	4.550359	0 13 30	0
0 13 30	30	461050	473406	485387	497015	508307	519281	529951	540334	550442	0 14 30	30
0 14 30	0	461155	473507	485485	497110	508400	519371	530039	540420	550525	0 15 30	0
0 15 30	30	461259	473608	485584	497206	508492	519461	530127	540505	550608	0 16 30	30
0 16 30	0	4.461364	4.473710	4.485682	4.497301	4.508585	4.519551	4.530215	4.540590	4.550692	0 17 30	0
0 17 30	30	461468	473811	485780	497396	508678	519641	530302	540676	550775	0 18 30	30
0 18 30	0	461573	473912	485878	497492	508770	519731	530390	540761	550858	0 19 30	0
0 19 30	30	461677	474013	485977	497587	508863	519821	530477	540846	550941	0 20 30	30
0 20 30	0	4.461782	4.474115	4.486075	4.497682	4.508956	4.519911	4.530565	4.540931	4.551024	0 21 30	0
0 21 30	30	461886	474216	486173	497778	509048	520001	530652	541017	551107	0 22 30	30
0 22 30	0	461990	474317	486271	497873	509141	520091	530740	541102	551190	0 23 30	0
0 23 30	30	462095	474418	486369	497968	509233	520181	530828	541187	551273	0 24 30	30
0 24 30	0	4.462199	4.474519	4.486467	4.498063	4.509326	4.520271	4.530915	4.541272	4.551356	0 25 30	0
0 25 30	30	462303	474520	486565	498159	509418	520361	531002	541357	551438	0 26 30	30
0 26 30	0	462407	474621	486663	498254	509511	520451	531090	541442	551521	0 27 30	0
0 27 30	30	462512	474722	486761	498349	509603	520541	531177	541527	551604	0 28 30	30
0 28 30	0	4.462616	4.474923	4.486859	4.498444	4.509696	4.520631	4.531265	4.541613	4.551687	0 29 30	0
0 29 30	30	462720	475024	486957	498539	509788	520720	531352	541698	551770	0 30 30	30
0 30 30	0	462824	475125	487055	498634	509880	520810	531440	541783	551853	0 31 30	0
0 31 30	30	462928	475226	487153	498729	509973	520900	531527	541868	551936	0 32 30	30
0 32 30	0	4.463032	4.475327	4.487311	4.498824	4.510065	4.520990	4.531614	4.541953	4.552018	0 33 30	0
0 33 30	30	463136	475428	487409	498919	510157	521080	531702	542038	552101	0 34 30	30
0 34 30	0	463240	475529	487507	499014	510250	521169	531789	542123	552184	0 35 30	0
0 35 30	30	463344	475630	487545	499109	510342	521259	531876	542208	552267	0 36 30	30
0 36 30	0	4.463448	4.475730	4.487643	4.499204	4.510434	4.521349	4.531963	4.542293	4.552349	0 37 30	0
0 37 30	30	463552	475831	487740	499299	510526	521438	532051	542377	552432	0 38 30	30
0 38 30	0	463656	475932	487838	499394	510619	521528	532138	542462	552515	0 39 30	0
0 39 30	30	463760	476033	487936	499489	510711	521618	532225	542547	552597	0 40 30	30
0 40 30	0	4.463864	4.476133	4.488033	4.499584	4.510803	4.521707	4.532312	4.542632	4.552680	0 41 30	0
0 41 30	30	463968	476234	488131	499679	510895	521797	532399	542717	552763	0 42 30	30
0 42 30	0	464072	476335	488229	499774	510987	521886	532487	542802	552845	0 43 30	0
0 43 30	30	464175	476435	488326	499868	511079	521976	532574	542887	552928	0 44 30	30
0 44 30	0	4.464279	4.476536	4.488424	4.499963	4.511172	4.522066	4.532661	4.542971	4.553010	0 45 30	0
0 45 30	30	464383	476636	488522	500058	511264	522155	532748	543056	553093	0 46 30	30
0 46 30	0	464486	476737	488619	500153	511356	522245	532835	543141	553175	0 47 30	0
0 47 30	30	464590	476837	488717	500247	511448	522334	532922	543226	553258	0 48 30	30
0 48 30	0	4.464694	4.476938	4.488814	4.500342	4.511540	4.522423	4.533009	4.543310	4.553341	0 49 30	0
0 49 30	30	464797	477038	488912	500437	511632	522513	533096	543395	553423	0 50 30	30
0 50 30	0	464901	477139	489009	500531	511724	522602	533183	543480	553505	0 51 30	0
0 51 30	30	465004	477239	489107	500626	511815	522692	533270	543564	553588	0 52 30	30
0 52 30	0	4.465108	4.477340	4.489204	4.500721	4.511907	4.522781	4.533355	4.543649	4.553670	0 53 30	0
0 53 30	30	465212	477440	489301	500815	511999	522870	533444	543733	553753	0 54 30	30
0 54 30	0	465315	477540	489399	500910	512091	522960	533531	543818	553835	0 55 30	0
0 55 30	30	465418	477641	489496	501004	512183	523049	533618	543903	553918	0 56 30	30
0 56 30	0	4.465522	4.477741	4.489593	4.501099	4.512275	4.523138	4.533704	4.543987	4.554000	0 57 30	0
0 57 30	30	465625	477841	489691	501193	512367	523228	533791	544072	554082	0 58 30	30
0 58 30	0	465729	477941	489788	501288	512458	523317	533878	544156	554165	0 59 30	0
0 59 30	30	465832	478042	489885	501382	512550	523406	533965	544241	554247	0 60 30	30
0 60 30	0	4.465935	4.478142	4.489982	4.501476	4.512642	4.523495	4.534052	4.544335	4.554329	0 61 30	0

11 Hours.

223

21 Hours.

2 Hours.

Log. Havensine. (4)

3 Hours.

Time m	Arc "	48"	52"	56"	3° 0'	4"	8"	12"	16"	20"	Time s m
		42°	43°	44°	45°	46°	47°	48°	49°	50°	
0	0	4.554329	4.564075	4.573575	4.581840	4.591878	4.600700	4.609313	4.617727	4.625948	0 2
0	30	554411	564158	573654	582916	591952	600772	609384	617796	626016	58 1
0	4	554494	564236	573732	582992	592027	600845	609455	617865	626084	56 1
0	6	554576	564316	573810	583068	592101	600917	609526	617935	626151	54 1
0	8	4.554658	4.564396	4.573888	4.583144	4.592175	4.600990	4.609597	4.618004	4.626219	52 1
0	10	554740	564476	573966	583221	592250	601063	609668	618073	626287	50 1
0	12	554822	564556	574044	583297	592324	601135	609739	618143	626354	48 1
0	14	554905	564636	574122	583373	592398	601208	609809	618213	626422	46 1
0	16	4.554987	4.564716	4.574200	4.583449	4.592473	4.601280	4.609880	4.618281	4.626490	44 1
0	18	555069	564796	574278	583525	592547	601353	609951	618350	626557	42 1
0	20	555151	564876	574356	583601	592621	601425	610022	618419	626625	40 1
0	22	555233	564956	574434	583677	592696	601498	610093	618488	626692	38 1
0	24	4.555315	4.565036	4.574512	4.583753	4.592770	4.601570	4.610163	4.618558	4.626760	36 1
0	26	555397	565116	574590	583830	592844	601643	610234	618627	626828	34 1
0	28	555479	565196	574668	583906	592918	601715	610305	618696	626895	32 1
0	30	555561	565276	574746	583982	592992	601788	610376	618765	626963	30 1
0	32	4.555643	4.565366	4.574824	4.584058	4.593067	4.601860	4.610446	4.618834	4.627030	28 1
0	34	555725	565436	574902	584134	593141	601932	610517	618903	627098	26 1
0	36	555807	565516	574980	584210	593215	602005	610588	618972	627165	24 1
0	38	555889	565596	575058	584285	593289	602077	610659	619041	627233	22 1
0	40	4.555971	4.565676	4.575136	4.584361	4.593363	4.602149	4.610729	4.619110	4.627300	20 1
0	42	556053	565755	575213	584437	593437	602222	610800	619179	627368	18 1
0	44	556135	565835	575291	584513	593511	602294	610870	619248	627435	16 1
0	46	556217	565915	575369	584589	593585	602366	610941	619317	627503	14 1
0	48	4.556299	4.565995	4.575447	4.584665	4.593659	4.602439	4.611012	4.619386	4.627570	12 1
0	50	556380	566074	575525	584741	593733	602511	611083	619455	627637	10 1
0	52	556462	566154	575602	584817	593807	602583	611153	619524	627705	8 1
0	54	556544	566234	575680	584893	593881	602656	611223	619593	627772	6 1
0	56	4.556626	4.566314	4.575758	4.584968	4.593955	4.602728	4.611294	4.619663	4.627840	4 1
0	58	556708	566393	575835	585044	594029	602800	611365	619731	627907	2 1
0	15	556789	566473	575913	585120	594103	602872	611435	619800	627974	0 1
0	15	556871	566553	575991	585196	594177	602944	611506	619869	628042	58 0
0	16	4.556953	4.566632	4.576068	4.585272	4.594251	4.603017	4.611576	4.619938	4.628109	56 0
0	16	557035	566712	576146	585347	594325	603089	611647	620007	628176	54 0
0	17	557116	566792	576224	585423	594399	603161	611717	620075	628244	52 0
0	17	557198	566871	576301	585499	594473	603233	611788	620144	628311	50 0
0	18	4.557280	4.566951	4.576379	4.585574	4.594547	4.603305	4.611858	4.620213	4.628378	48 0
0	18	557361	567030	576427	585650	594621	603377	611928	620282	628445	46 0
0	19	557443	567110	576534	585726	594695	603449	611999	620351	628513	44 0
0	19	557524	567189	576612	585801	594768	603521	620069	620420	628580	42 0
0	20	4.557606	4.567269	4.576689	4.585877	4.594842	4.603594	4.612140	4.620488	4.628647	40 0
0	20	557687	567348	576767	585953	594916	603666	612213	620557	628714	38 0
0	21	557769	567428	576844	586028	594990	603738	612280	620626	628781	36 0
0	21	557851	567507	576921	586104	595064	603810	612351	620695	628849	34 0
0	22	4.557932	4.567587	4.576999	4.586179	4.595137	4.603882	4.612421	4.620763	4.628916	32 0
0	22	558014	567666	577077	586255	595211	603954	612491	620832	628983	30 0
0	23	558095	567746	577154	586330	595285	604026	612561	620901	629050	28 0
0	23	558176	567825	577231	586406	595358	604098	612632	620969	629117	26 0
0	24	4.558258	4.567904	4.577309	4.586482	4.595432	4.604170	4.612702	4.621038	4.629184	24 0
0	24	558339	567984	577386	586557	595306	604242	612773	621107	629252	22 0
0	25	558421	568063	577464	586632	595379	604313	612843	621175	629319	20 0
0	25	558503	568142	577541	586708	595453	604385	612913	621244	629386	18 0
0	26	4.558583	4.568222	4.577618	4.586783	4.595727	4.604457	4.612983	4.621313	4.629453	16 0
0	26	558665	568302	577696	586859	595800	604529	613053	621381	629520	14 0
0	27	558746	568380	577773	586934	595874	604601	613124	621450	629587	12 0
0	27	558827	568459	577850	587010	595948	604673	613194	621518	629654	10 0
0	28	4.558909	4.568539	4.577927	4.587085	4.596021	4.604745	4.613264	4.621587	4.629721	8 0
0	28	558990	568618	578005	587160	596095	604817	613334	621656	629788	6 0
0	29	559071	568697	578082	587236	596168	604888	613404	621724	629855	4 0
0	29	559152	568776	578159	587311	596242	604960	613474	621793	629922	2 0
0	30	4.559234	4.568855	4.578236	4.587386	4.596315	4.605032	4.613545	4.621861	4.629989	0 0
0	30	10"	6"	2" 21'	58"	54"	50"	46"	42"	38"	0

21 Hours.

20 Hours.

2 Часа.

Log. Haversina. (6)

3 Часа.

	50"	54"	58"	3° 2'	6"	10"	14"	18"	22"	
Time	42° 30'	43° 30'	44° 30'	45° 30'	46° 30'	47° 30'	48° 30'	49° 30'	50° 30'	Time
0 0 30	4.559234	4.568855	4.578236	4.587386	4.596315	4.605032	4.613545	4.621861	4.629989	0 2
0 1 30	559315	568935	578314	587462	596389	605104	613615	621930	630056	1 2
0 2 30	559396	569014	578391	587537	596463	605175	613685	621998	630123	2 2
0 3 30	559477	569093	578468	587612	596536	605247	613755	622067	630190	3 2
0 4 30	4.559558	4.569172	4.578545	4.587688	4.596609	4.605319	4.613825	4.622135	4.630257	4 2
0 5 30	559640	569251	578622	587763	596683	605391	613895	622204	630324	5 2
0 6 30	559721	569330	578699	587838	596756	605462	613965	622272	630391	6 2
0 7 30	559802	569409	578776	587913	596830	605534	614035	622340	630457	7 2
0 8 30	4.559883	4.569488	4.578853	4.587988	4.596903	4.605606	4.614105	4.622409	4.630524	8 2
0 9 30	559964	569567	578930	588064	596976	605677	614175	622477	630591	9 2
0 10 30	560045	569646	579008	588139	597050	605749	614245	622546	630658	10 2
0 11 30	560126	569725	579085	588214	597123	605821	614315	622614	630725	11 2
0 12 30	4.560207	4.569804	4.579162	4.588289	4.597196	4.605892	4.614385	4.622682	4.630793	12 2
0 13 30	560288	569883	579239	588364	597270	605964	614455	622751	630858	13 2
0 14 30	560369	569962	579316	588439	597343	606035	614525	622819	630925	14 2
0 15 30	560450	570041	579393	588514	597416	606107	614595	622887	630992	15 2
0 16 30	4.560531	4.570120	4.579469	4.588590	4.597490	4.606179	4.614665	4.622956	4.631059	16 2
0 17 30	560612	570199	579546	588665	597563	606250	614735	623024	631126	17 2
0 18 30	560693	570278	579623	588740	597636	606322	614804	623092	631192	18 2
0 19 30	560774	570357	579700	588815	597709	606393	614874	623160	631259	19 2
0 20 30	4.560855	4.570435	4.579777	4.588890	4.597783	4.606465	4.614944	4.623229	4.631326	20 2
0 21 30	560935	570514	579854	588965	597856	606536	615014	623297	631392	21 2
0 22 30	561016	570593	579931	589040	597929	606608	615084	623365	631459	22 2
0 23 30	561097	570672	580008	589115	598002	606679	615154	623433	631526	23 2
0 24 30	4.561178	4.570751	4.580084	4.589190	4.598075	4.606751	4.615223	4.623502	4.631593	24 2
0 25 30	561259	570829	580161	589265	598149	606822	615293	623570	631659	25 2
0 26 30	561339	570908	580238	589339	598222	606893	615363	623638	631726	26 2
0 27 30	561420	570987	580315	589414	598295	606965	615433	623706	631792	27 2
0 28 30	4.561501	4.571066	4.580392	4.589489	4.598368	4.607036	4.615502	4.623774	4.631859	28 2
0 29 30	561582	571144	580468	589564	598441	607108	615572	623842	631926	29 2
0 30 30	561662	571223	580545	589639	598514	607179	615642	623911	631992	30 2
0 31 30	561743	571302	580622	589714	598587	607250	615712	623979	632059	31 2
0 32 30	4.561824	4.571380	4.580699	4.589789	4.598660	4.607322	4.615781	4.624047	4.632125	32 2
0 33 30	561904	571459	580775	589864	598733	607393	615851	624115	632192	33 2
0 34 30	561985	571537	580852	589938	598806	607464	615921	624183	632259	34 2
0 35 30	562066	571616	580929	590013	598879	607535	615990	624251	632325	35 2
0 36 30	4.562146	4.571695	4.581005	4.590088	4.598952	4.607607	4.616060	4.624329	4.632392	36 2
0 37 30	562227	571773	581082	590163	599025	607678	616129	624397	632458	37 2
0 38 30	562307	571852	581158	590237	599098	607749	616199	624465	632525	38 2
0 39 30	562388	571930	581235	590312	599171	607821	616269	624533	632591	39 2
0 40 30	4.562468	4.572009	4.581312	4.590387	4.599244	4.607892	4.616338	4.624591	4.632658	40 2
0 41 30	562549	572087	581388	590462	599317	607963	616408	624659	632724	41 2
0 42 30	562629	572166	581465	590536	599390	608034	616477	624727	632790	42 2
0 43 30	562710	572244	581541	590611	599463	608105	616547	624795	632857	43 2
0 44 30	4.562790	4.572323	4.581618	4.590686	4.599536	4.608176	4.616616	4.624863	4.632923	44 2
0 45 30	562871	572401	581694	590760	599608	608248	616686	624931	632990	45 2
0 46 30	562952	572479	581771	590835	599681	608319	616755	624999	633056	46 2
0 47 30	563032	572558	581847	590909	599754	608390	616825	625067	633122	47 2
0 48 30	4.563112	4.572636	4.581924	4.590984	4.599827	4.608461	4.616894	4.625135	4.633189	48 2
0 49 30	563192	572715	582000	591059	599900	608532	616964	625203	633255	49 2
0 50 30	563273	572793	582076	591133	599973	608603	617033	625270	633322	50 2
0 51 30	563353	572871	582153	591208	600045	608674	617103	625338	633388	51 2
0 52 30	4.563433	4.572949	4.582229	4.591282	4.600118	4.608745	4.617173	4.625406	4.633454	52 2
0 53 30	563514	573028	582305	591357	600191	608816	617241	625474	633520	53 2
0 54 30	563594	573106	582382	591431	600264	608887	617311	625542	633587	54 2
0 55 30	563674	573184	582458	591506	600336	608958	617380	625609	633653	55 2
0 56 30	4.563755	4.573263	4.582534	4.591580	4.600409	4.609029	4.617450	4.625677	4.633719	56 2
0 57 30	563835	573341	582612	591655	600482	609100	617519	625745	633786	57 2
0 58 30	563915	573419	582687	591729	600554	609171	617588	625813	633852	58 2
0 59 30	563995	573497	582763	591804	600627	609242	617658	625880	633918	59 2
0 60 30	4.564075	4.573575	4.582840	4.591878	4.600700	4.609313	4.617727	4.625948	4.633984	60 2
8"	8"	4"	0° 21'	56"	52"	48"	44"	40"	36"	Time

21 Часа.

224

20 Часа.

3 Hours.

Log. Havermine. (1)

3 Hours.

Time	Sec.	24"	28"	32"	36"	40"	44"	48"	52"	56"	Time
		51°	52°	53°	54°	55°	56°	57°	58°	59°	
0 0	0	4.633984	4.641843	4.649527	4.657047	4.664406	4.671609	4.678663	4.685571	4.692339	0 1
0 1	0	634051	641907	649591	657109	664466	671669	678721	685628	692395	0 2
0 2	0	634117	641971	649654	657171	664527	671728	678779	685685	692452	0 3
0 3	0	634183	642036	649717	657233	664588	671787	678837	685742	692506	0 4
0 4	0	634249	642101	649781	657295	664648	671847	678895	685799	692561	0 5
0 5	0	634315	642166	649844	657356	664709	671906	678954	685856	692618	0 6
0 6	0	634381	642230	649907	657418	664769	671965	679012	685913	692674	0 7
0 7	0	634447	642295	649971	657480	664830	672025	679070	685970	692729	0 8
0 8	0	634514	642360	650034	657542	664891	672084	679128	686027	692785	0 9
0 9	0	634580	642424	650097	657604	664951	672143	679186	686084	692841	1 0
1 0	0	634646	642489	650160	657666	665012	672203	679244	686140	692897	1 1
1 1	0	634712	642553	650223	657728	665072	672262	679301	686197	692952	1 2
1 2	0	634778	642618	650287	657790	665133	672321	679360	686254	693008	1 3
1 3	0	634844	642683	650350	657852	665193	672381	679418	686311	693064	1 4
1 4	0	634910	642747	650413	657913	665254	672440	679476	686368	693119	1 5
1 5	0	634976	642812	650476	657975	665314	672499	679534	686425	693175	1 6
1 6	0	635042	642876	650539	658037	665375	672558	679592	686482	693231	1 7
1 7	0	635108	642941	650603	658099	665435	672618	679650	686538	693286	1 8
1 8	0	635174	643006	650666	658161	665496	672677	679708	686595	693342	1 9
1 9	0	635240	643070	650729	658222	665556	672736	679766	686652	693398	2 0
2 0	0	635306	643135	650792	658284	665617	672795	679824	686709	693453	2 1
2 1	0	635372	643199	650855	658346	665677	672854	679882	686766	693509	2 2
2 2	0	635438	643264	650918	658408	665738	672913	679940	686822	693565	2 3
2 3	0	635504	643328	650981	658469	665798	672973	679998	686879	693620	2 4
2 4	0	635570	643393	651044	658531	665859	673032	680056	686936	693676	2 5
2 5	0	635636	643457	651107	658593	665919	673091	680114	686993	693731	2 6
2 6	0	635702	643521	651170	658655	665979	673150	680172	687050	693787	2 7
2 7	0	635768	643586	651234	658716	666040	673209	680230	687106	693842	2 8
2 8	0	635833	643650	651297	658778	666100	673268	680288	687163	693898	2 9
2 9	0	635899	643715	651360	658840	666160	673327	680345	687219	693954	3 0
3 0	0	635965	643779	651423	658901	666221	673387	680403	687276	694009	3 1
3 1	0	636031	643844	651486	658963	666281	673446	680461	687333	694065	3 2
3 2	0	636097	643908	651549	659025	666341	673505	680519	687389	694120	3 3
3 3	0	636163	643972	651612	659086	666402	673564	680577	687446	694176	3 4
3 4	0	636228	644037	651674	659148	666462	673623	680635	687503	694231	3 5
3 5	0	636294	644101	651737	659209	666522	673682	680693	687559	694287	3 6
3 6	0	636360	644165	651800	659271	666583	673741	680750	687616	694342	3 7
3 7	0	636426	644230	651863	659333	666643	673800	680808	687673	694398	3 8
3 8	0	636492	644294	651926	659394	666703	673859	680866	687729	694453	3 9
3 9	0	636557	644358	651989	659456	666764	673918	680924	687786	694509	4 0
4 0	0	636623	644423	652052	659517	666824	673977	680982	687842	694564	4 1
4 1	0	636689	644487	652115	659579	666884	674036	681039	687899	694620	4 2
4 2	0	636754	644551	652178	659640	666944	674095	681097	687956	694675	4 3
4 3	0	636820	644615	652241	659702	667004	674154	681155	688012	694730	4 4
4 4	0	636886	644680	652303	659763	667065	674213	681213	688069	694786	4 5
4 5	0	636951	644744	652366	659825	667125	674272	681270	688125	694841	4 6
4 6	0	637017	644808	652429	659886	667185	674331	681328	688182	694897	4 7
4 7	0	637083	644872	652492	659948	667245	674390	681386	688238	694952	4 8
4 8	0	637148	644936	652555	660009	667305	674448	681443	688295	695007	4 9
4 9	0	637214	645001	652618	660071	667366	674507	681501	688351	695063	5 0
5 0	0	637280	645065	652680	660132	667426	674566	681559	688408	695118	5 1
5 1	0	637345	645129	652743	660194	667486	674625	681616	688464	695173	5 2
5 2	0	637411	645193	652806	660255	667546	674684	681674	688521	695229	5 3
5 3	0	637476	645257	652869	660316	667606	674743	681732	688577	695284	5 4
5 4	0	637542	645321	652931	660378	667666	674802	681789	688634	695339	5 5
5 5	0	637607	645385	652994	660439	667726	674860	681847	688690	695395	5 6
5 6	0	637673	645450	653057	660500	667786	674919	681905	688747	695450	5 7
5 7	0	637739	645514	653119	660562	667846	674978	681963	688803	695505	5 8
5 8	0	637804	645578	653182	660623	667906	675037	682020	688859	695561	5 9
5 9	0	637870	645642	653245	660685	667966	675096	682077	688916	695616	6 0
6 0	0	637935	645706	653307	660746	668026	675155	682135	688972	695671	6 1
6 1	0	637999	645769	653369	660807	668086	675214	682193	689028	695726	6 2
6 2	0	638064	645833	653431	660868	668146	675273	682251	689084	695781	6 3
6 3	0	638128	645896	653493	660929	668206	675332	682309	689140	695836	6 4
6 4	0	638193	645960	653555	660990	668266	675391	682367	689195	695891	6 5
6 5	0	638257	646023	653617	661051	668326	675450	682425	689251	695946	6 6
6 6	0	638322	646087	653679	661112	668386	675509	682483	689306	695999	6 7
6 7	0	638386	646150	653741	661173	668446	675568	682541	689362	696054	6 8
6 8	0	638451	646214	653803	661234	668506	675627	682599	689417	696109	6 9
6 9	0	638515	646277	653865	661295	668566	675686	682657	689473	696164	7 0
7 0	0	638580	646341	653927	661356	668626	675745	682715	689528	696219	7 1
7 1	0	638644	646404	653989	661417	668686	675804	682773	689584	696274	7 2
7 2	0	638709	646468	654051	661478	668746	675863	682831	689639	696329	7 3
7 3	0	638773	646531	654113	661539	668806	675922	682889	689695	696384	7 4
7 4	0	638838	646595	654175	661600	668866	675981	682947	689750	696439	7 5
7 5	0	638902	646658	654237	661661	668926	676040	683005	689806	696494	7 6
7 6	0	638967	646722	654299	661722	668986	676099	683063	689861	696549	7 7
7 7	0	639031	646785	654361	661783	669046	676158	683121	689917	696604	7 8
7 8	0	639096	646849	654423	661844	669106	676217	683179	690000	696659	7 9
7 9	0	639160	646912	654485	661905	669166	676276	683237	690055	696714	8 0
8 0	0	639225	646976	654547	661966	669226	676335	683295	690110	696769	8 1
8 1	0	639289	647039	654609	662027	669286	676394	683353	690165	696824	8 2
8 2	0	639354	647103	654671	662088	669346	676453	683411	690220	696879	8 3
8 3	0	639418	647166	654733	662149	669406	676512	683469	690275	696934	8 4
8 4	0	639483	647230	654795	662210	669466	676571	683527	690330	696989	8 5
8 5	0	639547	647293	654857	662271	669526	676630	683585	690385	697044	8 6
8 6	0	639612	647357	654919	662332	669586	676689	683643	690440	697099	8 7
8 7	0	639676	647420	654981	662393	669646	676748	683701	690495	697154	8 8
8 8	0	639741	647484	655043	662454	669706	676807	683759	690550	697209	8 9
8 9	0	639805	647547	655105	662515	669766	676866	683817	690605	697264	9 0
9 0	0	639870	647611	655167	662576	669826	676925	683875	690660	697319	9 1
9 1	0	639934	647674	655229	662637	669886	676984	683933	690715	697374	9 2
9 2	0	640000	647738	655291	662698	669946	677043	683991	690770	697429	9 3
9 3	0	640064	647801	655353	662759	670006	677102	684049	690825	697484	9 4
9 4	0	640129	647865	655415	662820	670066	677161	684107	690880	697539	9 5
9 5	0	640193	647928	655477	6						

3 Hours.

Log. Havernina. (1)

3 Hours.

	26"	30"	34"	38"	42"	46"	50"	54"	58"	Time
Ar.	51° 30'	52° 30'	53° 30'	54° 30'	55° 30'	56° 30'	57° 30'	58° 30'	59° 30'	
0 0	4.617935	4.645706	4.653307	4.660746	4.668026	4.675155	4.682135	4.688972	4.695671	0 2
1 0	638000	645770	653370	660809	668086	675213	682193	689029	695726	1 2
2 0	638066	645834	653433	660868	668147	675272	682250	689085	695782	2 2
3 0	638131	645898	653495	660930	668207	675331	682308	689141	695837	3 2
4 0	638197	645962	653558	660991	668266	675390	682365	689198	695892	4 2
5 0	638262	646026	653621	661052	668326	675448	682423	689254	695947	5 2
6 0	638328	646090	653683	661114	668386	675507	682480	689310	696003	6 2
7 0	638393	646154	653746	661175	668446	675566	682538	689367	696056	7 2
8 0	638458	646218	653808	661236	668506	675624	682595	689423	696113	8 2
9 0	638524	646282	653871	661297	668566	675683	682653	689479	696168	9 2
10 0	638589	646346	653933	661359	668626	675742	682710	689536	696223	10 2
11 0	638655	646410	653996	661420	668686	675800	682768	689592	696278	11 2
12 0	638720	646473	654059	661481	668746	675859	682825	689648	696334	12 2
13 0	638785	646537	654121	661542	668806	675918	682882	689703	696389	13 2
14 0	638851	646601	654184	661603	668866	675976	682940	689761	696444	14 2
15 0	638916	646665	654246	661664	668926	676035	682997	689817	696499	15 2
16 0	638981	646729	654309	661726	668988	676094	683055	689873	696555	16 2
17 0	639046	646793	654372	661787	669045	676152	683112	689930	696609	17 2
18 0	639112	646857	654433	661848	669105	676211	683170	689986	696664	18 2
19 0	639177	646920	654496	661909	669165	676269	683227	690042	696719	19 2
20 0	639241	646984	654558	661970	669225	676328	683284	690098	696774	20 2
21 0	639307	647048	654621	662031	669285	676387	683342	690154	696830	21 2
22 0	639373	647112	654683	662092	669345	676445	683399	690211	696885	22 2
23 0	639438	647176	654746	662153	669404	676504	683456	690267	696940	23 2
24 0	639503	647239	654808	662214	669464	676562	683514	690323	696995	24 2
25 0	639568	647303	654870	662275	669524	676621	683571	690379	697050	25 2
26 0	639633	647367	654933	662337	669584	676679	683628	690435	697105	26 2
27 0	639698	647431	654995	662398	669643	676738	683686	690491	697160	27 2
28 0	639764	647494	655057	662459	669703	676796	683743	690548	697215	28 2
29 0	639829	647558	655120	662520	669763	676855	683800	690604	697270	29 2
30 0	639894	647622	655182	662581	669823	676913	683857	690660	697325	30 2
31 0	639959	647686	655244	662642	669882	676972	683915	690716	697380	31 2
32 0	640024	647749	655307	662703	669942	677030	683972	690772	697435	32 2
33 0	640089	647813	655369	662764	670002	677089	684029	690828	697490	33 2
34 0	640154	647877	655431	662824	670061	677147	684086	690884	697545	34 2
35 0	640219	647940	655494	662885	670121	677205	684144	690940	697600	35 2
36 0	640284	648004	655556	662946	670181	677264	684201	690996	697655	36 2
37 0	640349	648067	655618	663007	670240	677322	684258	691052	697709	37 2
38 0	640414	648131	655680	663068	670300	677381	684315	691108	697764	38 2
39 0	640479	648195	655743	663129	670360	677439	684373	691164	697819	39 2
40 0	640544	648258	655805	663190	670419	677497	684430	691220	697874	40 2
41 0	640609	648322	655867	663251	670479	677556	684487	691276	697929	41 2
42 0	640674	648385	655929	663312	670538	677614	684544	691332	697984	42 2
43 0	640739	648449	655991	663373	670598	677673	684601	691388	698039	43 2
44 0	640804	648512	656054	663433	670658	677731	684658	691444	698094	44 2
45 0	640869	648576	656116	663494	670717	677789	684715	691500	698148	45 2
46 0	640934	648639	656178	663555	670777	677848	684773	691556	698203	46 2
47 0	640999	648703	656240	663616	670836	677906	684830	691612	698258	47 2
48 0	641064	648766	656303	663677	670896	677964	684887	691668	698313	48 2
49 0	641129	648830	656364	663738	670955	678022	684944	691724	698368	49 2
50 0	641194	648893	656426	663798	671015	678081	685001	691780	698422	50 2
51 0	641259	648957	656488	663859	671074	678139	685058	691836	698477	51 2
52 0	641323	649020	656550	663920	671134	678197	685115	691892	698532	52 2
53 0	641388	649084	656613	663981	671193	678255	685172	691948	698587	53 2
54 0	641453	649147	656675	664041	671253	678314	685229	692004	698642	54 2
55 0	641518	649211	656737	664102	671312	678373	685286	692060	698696	55 2
56 0	641583	649274	656799	664163	671372	678430	685343	692115	698751	56 2
57 0	641648	649337	656861	664223	671431	678488	685400	692171	698806	57 2
58 0	641712	649401	656923	664284	671490	678546	685457	692227	698861	58 2
59 0	641777	649464	656985	664345	671550	678605	685514	692283	698915	59 2
60 0	641842	649527	657047	664406	671609	678663	685571	692339	698970	60 2
32"	28"	24"	20"	16"	12"	8"	4"	0"		Time

30 Hours.

225

2

30 Hours.

4 Hours.

Log. Havensina. (6)

4 Hours.

		0 ^m	4 ^m	8 ^m	12 ^m	16 ^m	20 ^m	24 ^m	28 ^m	32 ^m		
Time	Arc.	60°	61°	62°	63°	64°	65°	66°	67°	68°	Time	Arc.
0	0	4.698970	4.705469	4.711839	4.718085	4.724210	4.730216	4.736109	4.741889	4.747562	0	0
0	4	699079	705576	711944	718188	724311	730316	736206	741985	747755	0	4
0	8	699189	705683	712049	718291	724412	730415	736303	742080	747849	0	8
0	12	699298	705790	712155	718394	724513	730514	736400	742176	747942	0	12
0	16	4.699407	4.705897	4.712260	4.718497	4.724614	4.730613	4.736498	4.742271	4.747936	0	16
0	20	699517	706005	712364	718600	724715	730712	736595	742366	748029	0	20
0	24	699616	706112	712469	718703	724816	730811	736692	742462	748123	0	24
0	28	699735	706219	712574	718806	724916	730910	736789	742557	748216	0	28
0	32	4.699844	4.706326	4.712679	4.718909	4.725017	4.731009	4.736886	4.742652	4.748310	0	32
0	36	699953	706433	712784	719011	725118	731108	736983	742747	748403	0	36
0	40	700062	706539	712889	719114	725219	731206	737080	742842	748497	0	40
0	44	700171	706646	712994	719217	725320	731305	737177	742937	748590	0	44
0	48	4.700280	4.706753	4.713098	4.719320	4.725420	4.731404	4.737274	4.743032	4.748683	0	48
0	52	700389	706860	713203	719422	725521	731503	737371	743128	748777	0	52
0	56	700496	706967	713308	719525	725622	731601	737467	743223	748870	0	56
1	0	700607	707073	713412	719627	725722	731700	737564	743318	748963	0	0
1	4	4.700716	4.707180	4.713517	4.719730	4.725823	4.731799	4.737661	4.743413	4.749056	1	4
1	8	700825	707287	713621	719833	725923	731897	737758	743507	749149	1	8
1	12	700933	707393	713726	719935	726024	731996	737855	743602	749242	1	12
1	16	701042	707500	713830	720037	726124	732095	737951	743697	749336	1	16
1	20	4.701151	4.707606	4.713935	4.720140	4.726225	4.732193	4.738048	4.743792	4.749426	1	20
1	24	701259	707713	714039	720242	726325	732292	738145	743887	749521	1	24
1	28	701368	707819	714144	720345	726426	732390	738241	743982	749615	1	28
1	32	701477	707926	714248	720447	726526	732489	738338	744076	749708	1	32
1	36	4.701585	4.708032	4.714352	4.720549	4.726626	4.732587	4.738434	4.744171	4.749801	1	36
1	40	701694	708139	714457	720651	726727	732685	738531	744266	749894	1	40
1	44	701802	708245	714561	720754	726827	732784	738627	744361	749987	1	44
1	48	701911	708351	714665	720856	726927	732882	738724	744455	750079	1	48
1	52	4.702019	4.708457	4.714769	4.720958	4.727027	4.732980	4.738820	4.744550	4.750172	1	52
1	56	702127	708564	714873	721060	727127	733079	738916	744644	750265	1	56
2	0	702236	708670	714978	721162	727228	733177	739013	744739	750358	2	0
2	4	702344	708776	715082	721264	727328	733275	739109	744833	750452	2	4
2	8	4.702452	4.708882	4.715186	4.721366	4.727428	4.733373	4.739205	4.744928	4.750543	2	8
2	12	702560	708988	715290	721468	727528	733471	739302	745022	750636	2	12
2	16	702669	709094	715394	721570	727628	733569	739398	745117	750729	2	16
2	20	702777	709200	715498	721672	727726	733667	739494	745211	750822	2	20
2	24	4.702885	4.709306	4.715601	4.721774	4.727828	4.733765	4.739590	4.745306	4.750914	2	24
2	28	702993	709412	715705	721876	727928	733863	739686	745400	750972	2	28
2	32	703101	709518	715809	721978	728027	733961	739783	745494	751099	2	32
2	36	703209	709624	715913	722080	728127	734059	739879	745589	751192	2	36
2	40	4.703317	4.709730	4.716017	4.722181	4.728227	4.734157	4.739975	4.745683	4.751284	2	40
2	44	703425	709836	716120	722283	728327	734255	740071	745777	751377	2	44
2	48	703533	709941	716224	722385	728427	734353	740167	745871	751469	2	48
2	52	703641	710047	716328	722486	728526	734451	740263	745965	751561	2	52
2	56	4.703749	4.710153	4.716432	4.722588	4.728626	4.734548	4.740359	4.746059	4.751654	2	56
3	0	703856	710259	716535	722690	728726	734646	740455	746154	751746	3	0
3	4	703964	710364	716639	722791	728825	734744	740550	746248	751838	3	4
3	8	704072	710470	716742	722893	728925	734842	740646	746342	751931	3	8
3	12	4.704179	4.710575	4.716846	4.722994	4.729024	4.734939	4.740742	4.746436	4.752023	3	12
3	16	704287	710681	716949	723096	729124	735037	740838	746530	752115	3	16
3	20	704395	710786	717053	723197	729223	735134	740934	746624	752207	3	20
3	24	704502	710892	717156	723299	729323	735232	741029	746718	752299	3	24
3	28	4.704610	4.710997	4.717259	4.723400	4.729422	4.735330	4.741125	4.746811	4.752392	3	28
3	32	704717	711103	717363	723501	729522	735427	741221	746905	752484	3	32
3	36	704825	711208	717466	723603	729621	735525	741316	746999	752576	3	36
3	40	704932	711313	717569	723704	729720	735622	741412	747093	752668	3	40
3	44	4.705040	4.711419	4.717672	4.723805	4.729820	4.735719	4.741507	4.747187	4.752760	3	44
3	48	705147	711524	717776	723906	729919	735817	741603	747281	752852	3	48
3	52	705254	711629	717879	724007	730018	735914	741699	747374	752944	3	52
3	56	705362	711734	717982	724109	730117	736011	741794	747468	753036	3	56
4	0	4.705469	4.711839	4.718085	4.724210	4.730216	4.736109	4.741889	4.747562	4.753128	4	0
		56 ^m	52 ^m	48 ^m	44 ^m	40 ^m	36 ^m	32 ^m	28 ^m	24 ^m		

19 Hours.

19 Hours.

4 Hours.

Log. Havensines. (t)

5 Hours.

		86°	40°	44°	48°	52°	56°	5° 0'	4°	8°		
Time	Lat.	89°	70°	71°	72°	73°	74°	75°	76°	77°	s	m
0 0	0	4.753128	4.758591	4.763954	4.769219	4.774388	4.779463	4.784447	4.789342	4.794150	0	4
0 1	1	753220	758681	764043	769306	774473	779547	784529	789423	794229	56	3
0 2	2	753312	758772	764131	769392	774558	779631	784612	789504	794308	52	3
0 3	3	753404	758862	764220	769479	774644	779714	784694	789584	794388	48	3
0 4	4	4.753495	4.758952	4.764308	4.769566	4.774729	4.779798	4.784776	4.789665	4.794467	44	3
0 5	5	753587	759042	764396	769653	774814	779882	784858	789746	794546	40	3
0 6	6	753679	759132	764485	769740	774899	779965	784941	789827	794626	36	3
0 7	7	753771	759223	764573	769827	774984	780049	785023	789907	794705	32	3
0 8	8	4.753862	4.759313	4.764662	4.769913	4.775070	4.780133	4.785105	4.789988	4.794784	28	3
0 9	9	753954	759403	764750	770000	775155	780216	785187	790069	794863	24	3
0 10	10	754046	759493	764838	770087	775240	780300	785269	790149	794942	20	3
0 11	11	754137	759582	764926	770173	775325	780384	785351	790230	795022	16	3
0 12	12	4.754229	4.759672	4.765015	4.770260	4.775410	4.780467	4.785431	4.790310	4.795101	12	3
0 13	13	754320	759762	765103	770347	775495	780551	785514	790391	795180	8	3
0 14	14	754412	759851	765191	770433	775580	780634	785597	790479	795259	4	3
0 15	15	754503	759941	765279	770520	775665	780717	785679	790552	795338	0	3
1 4	16	4.754595	4.760031	4.765367	4.770606	4.775750	4.780801	4.785761	4.790632	4.795417	56	2
1 5	17	754686	760121	765455	770693	775835	780884	785843	790713	795496	52	2
1 6	18	754778	760211	765544	770779	775920	780968	785925	790793	795575	48	2
1 7	19	754869	760300	765632	770866	776005	781051	786007	790874	795654	44	2
1 20	20	4.754960	4.760390	4.765720	4.770952	4.776090	4.781134	4.786089	4.790954	4.795733	40	2
1 21	21	755052	760480	765808	771039	776174	781218	786170	791034	795812	36	2
1 22	22	755143	760569	765896	771125	776259	781301	786252	791115	795891	32	2
1 23	23	755234	760659	765984	771211	776344	781384	786334	791195	795970	28	2
1 24	24	4.755326	4.760748	4.766071	4.771298	4.776439	4.781467	4.786416	4.791275	4.796049	24	2
1 25	25	755417	760838	766159	771384	776514	781551	786497	791356	796127	20	2
1 26	26	755508	760927	766247	771470	776598	781634	786579	791436	796206	16	2
1 27	27	755599	761017	766335	771556	776683	781717	786661	791516	796285	12	2
1 28	28	4.755690	4.761106	4.766423	4.771643	4.776768	4.781800	4.786742	4.791596	4.796364	8	2
1 29	29	755781	761196	766511	771729	776852	781883	786824	791676	796442	4	2
1 30	30	755872	761285	766598	771815	776937	781966	786906	791757	796521	0	2
1 31	31	755963	761374	766686	771901	777021	782049	786987	791837	796600	56	1
1 32	32	4.756054	4.761454	4.766774	4.771987	4.777106	4.782132	4.787069	4.791917	4.796679	52	1
1 33	33	756145	761543	766862	772073	777190	782215	787150	791997	796757	48	1
1 34	34	756236	761632	766949	772159	777275	782298	787232	792077	796836	44	1
1 35	35	756327	761722	767037	772245	777359	782381	787313	792157	796914	40	1
1 36	36	4.756418	4.761821	4.767124	4.772331	4.777444	4.782464	4.787395	4.792137	4.796993	36	1
1 37	37	756509	761910	767212	772417	777528	782547	787476	792317	797072	32	1
1 38	38	756600	762000	767300	772503	777613	782630	787559	792397	797150	28	1
1 39	39	756691	762088	767387	772589	777697	782713	787639	792477	797229	24	1
1 40	40	4.756781	4.762177	4.767475	4.772675	4.777781	4.782796	4.787720	4.792555	4.797307	20	1
1 41	41	756872	762267	767562	772761	777866	782879	787801	792636	797386	16	1
1 42	42	756963	762356	767649	772847	777950	782961	787883	792716	797464	12	1
1 43	43	757054	762445	767737	772933	778034	783044	787964	792796	797542	8	1
1 44	44	4.757144	4.762534	4.767824	4.773018	4.778119	4.783127	4.788045	4.792876	4.797621	4	1
1 45	45	757235	762623	767912	773104	778203	783209	788126	792956	797699	0	1
1 46	46	757326	762712	767999	773190	778287	783292	788208	793035	797777	56	0
1 47	47	757416	762800	768086	773276	778371	783375	788289	793115	797856	52	0
1 48	48	4.757507	4.762889	4.768173	4.773361	4.778455	4.783457	4.788370	4.793195	4.797934	48	0
1 49	49	757597	762978	768261	773447	778539	783540	788451	793275	798012	44	0
1 50	50	757688	763067	768348	773533	778623	783623	788532	793354	798091	40	0
1 51	51	757778	763156	768435	773616	778708	783705	788613	793434	798169	36	0
1 52	52	4.757869	4.763245	4.768522	4.773704	4.778792	4.783788	4.788694	4.793513	4.798247	32	0
1 53	53	757959	763333	768609	773789	778876	783870	788775	793593	798325	28	0
1 54	54	758049	763422	768697	773875	778960	783953	788856	793673	798403	24	0
1 55	55	758140	763511	768784	773960	779044	784035	788937	793752	798481	20	0
1 56	56	4.758230	4.763600	4.768871	4.774046	4.779127	4.784118	4.789018	4.793832	4.798560	16	0
1 57	57	758320	763688	768958	774131	779211	784200	789099	793911	798638	12	0
1 58	58	758411	763777	769045	774217	779295	784282	789180	793991	798716	8	0
1 59	59	758501	763865	769132	774302	779379	784365	789261	794070	798794	4	0
1 60	60	4.758591	4.763954	4.769219	4.774388	4.779463	4.784447	4.789342	4.794150	4.798872	0	0
		20°	16°	12°	8°	4°	0° 19'	56°	52°	48°		

19 Hours.

236

2 t

16 Hours.

5 Hours.

Log. Haversines. (1)

5 Hours.

Time in m	Arc 7	12"	16"	20"	24"	28"	32"	36"	40"	44"	Time in m
		78°	79°	80°	81°	82°	83°	84°	85°	86°	
0	0	4.798875	4.803510	4.808067	4.812544	4.816943	4.821265	4.825511	4.829683	4.833783	0
0	4	798950	803587	808143	812618	817016	821336	825581	829752	833851	4
0	8	799028	803664	808218	812692	817088	821407	825651	829821	833919	8
0	12	799106	803740	808293	812766	817161	821479	825721	829890	833986	12
0	16	4.799184	4.803817	4.808368	4.812840	4.817233	4.821550	4.825791	4.829959	4.834054	16
0	20	799261	803893	808444	812914	817306	821621	825861	830028	834122	20
0	24	799339	803970	808519	812988	817378	821693	825931	830097	834189	24
0	28	799417	804046	808594	813062	817451	821764	826001	830165	834257	28
0	32	4.799495	4.804123	4.808669	4.813135	4.817523	4.821835	4.826071	4.830234	4.834325	32
0	36	799573	804199	808744	813209	817596	821906	826141	830303	834392	36
0	40	799651	804276	808819	813283	817668	821977	826211	830372	834460	40
0	44	799728	804352	808894	813357	817741	822049	826281	830440	834527	44
0	48	4.799806	4.804428	4.808969	4.813430	4.817813	4.822120	4.826351	4.830509	4.834595	48
0	52	799884	804505	809044	813504	817886	822191	826421	830578	834662	52
0	56	799962	804581	809119	813578	817958	822262	826491	830646	834730	56
0	60	800039	804657	809194	813651	818030	822333	826561	830715	834797	60
1	0	4.800117	4.804734	4.809269	4.813725	4.818103	4.822404	4.826631	4.830784	4.834865	1
1	4	800194	804810	809344	813799	818175	822475	826700	830852	834932	5
1	8	800272	804886	809419	813872	818247	822546	826770	830921	834999	9
1	12	800350	804962	809494	813946	818320	822617	826840	830989	835067	13
1	16	4.800427	4.805038	4.809569	4.814019	4.818392	4.822688	4.826910	4.831058	4.835134	17
1	20	800505	805115	809643	814093	818464	822759	826980	831126	835201	21
1	24	800582	805191	809718	814166	818536	822830	827049	831195	835269	25
1	28	800660	805267	809793	814240	818609	822901	827119	831263	835336	29
1	32	4.800737	4.805343	4.809868	4.814313	4.818681	4.822972	4.827189	4.831332	4.835403	33
1	36	800815	805419	809941	814387	818753	823043	827258	831400	835471	37
1	40	800892	805495	810017	814460	818825	823114	827324	831469	835538	41
1	44	800969	805571	810092	814533	818897	823185	827398	831537	835605	45
1	48	4.801047	4.805647	4.810167	4.814607	4.818969	4.823255	4.827467	4.831606	4.835672	49
1	52	801124	805723	810241	814680	819041	823326	827537	831674	835739	53
1	56	801201	805799	810316	814753	819113	823397	827606	831742	835807	57
1	60	801279	805875	810390	814827	819185	823468	827676	831811	835874	61
2	0	4.801356	4.805951	4.810465	4.814900	4.819257	4.823539	4.827745	4.831879	4.835941	65
2	4	801433	806027	810540	814973	819329	823609	827815	831947	836008	69
2	8	801511	806103	810614	815046	819401	823680	827885	832015	836075	73
2	12	801588	806179	810689	815120	819473	823751	827954	832084	836142	77
2	16	4.801665	4.806254	4.810763	4.815193	4.819545	4.823821	4.828023	4.832152	4.836209	81
2	20	801742	806330	810838	815266	819617	823892	828093	832220	836276	85
2	24	801819	806406	810912	815339	819689	823963	828162	832288	836343	89
2	28	801896	806482	810986	815412	819761	824033	828231	832356	836410	93
2	32	4.801973	4.806557	4.811061	4.815485	4.819832	4.824104	4.828301	4.832425	4.836477	97
2	36	802050	806633	811135	815558	819904	824174	828370	832493	836544	101
2	40	802128	806709	811210	815631	819976	824245	828439	832561	836611	105
2	44	802205	806785	811284	815704	820048	824315	828509	832629	836678	109
2	48	4.802282	4.806860	4.811358	4.815778	4.820120	4.824386	4.828578	4.832697	4.836745	113
2	52	802359	806936	811433	815851	820191	824456	828647	832765	836812	117
2	56	802435	807011	811507	815923	820263	824527	828716	832833	836878	121
2	60	802512	807087	811581	815996	820335	824597	828785	832901	836945	125
3	0	4.802589	4.807163	4.811655	4.816069	4.820406	4.824668	4.828855	4.832969	4.837012	129
3	4	802666	807238	811730	816142	820478	824738	828924	833037	837079	133
3	8	802743	807314	811804	816215	820550	824808	828993	833105	837146	137
3	12	802820	807389	811878	816288	820621	824879	829062	833173	837212	141
3	16	4.802897	4.807465	4.811952	4.816361	4.820693	4.824949	4.829131	4.833241	4.837279	145
3	20	802974	807540	812026	816434	820764	825019	829200	833309	837346	149
3	24	803050	807615	812100	816507	820836	825090	829269	833377	837412	153
3	28	803127	807691	812174	816579	820907	825160	829338	833444	837479	157
3	32	4.803204	4.807766	4.812248	4.816652	4.820979	4.825230	4.829407	4.833512	4.837546	161
3	36	803280	807842	812322	816725	821050	825300	829476	833580	837612	165
3	40	803357	807917	812396	816797	821122	825370	829545	833648	837679	169
3	44	803434	807992	812470	816870	821193	825441	829614	833716	837746	173
3	48	803510	808067	812544	816943	821265	825511	829683	833783	837812	177
3	52	4.803587	4.808143	4.812699	4.817161	4.821516	4.825761	4.829911	4.833971	4.837991	181
3	56	803664	808218	812766	817306	821764	826001	830165	834257	838267	185
3	60	803740	808293	812840	817378	821835	826071	830234	834325	838336	189
4	0	4.803817	4.808368	4.812840	4.817233	4.821550	4.825791	4.829959	4.834054	4.838074	193
4	4	803893	808444	812914	817306	821621	825861	830028	834122	838132	197
4	8	803970	808519	812988	817378	821693	825931	830097	834189	838200	201
4	12	804046	808594	813062	817451	821764	826001	830165	834257	838267	205
4	16	4.804123	4.808669	4.813135	4.817523	4.821835	4.826071	4.830234	4.834325	4.838336	209
4	20	804199	808744	813209	817596	821906	826141	830303	834392	838392	213
4	24	804276	808819	813283	817668	821977	826211	830372	834460	838460	217
4	28	804352	808894	813357	817741	822049	826281	830440	834527	838527	221
4	32	4.804428	4.808969	4.813430	4.817813	4.822120	4.826351	4.830509	4.834595	4.838595	225
4	36	804505	809044	813504	817886	822191	826421	830578	834662	838662	229
4	40	804581	809119	813578	817958	822262	826491	830646	834730	838730	233
4	44	804657	809194	813651	818030	822333	826561	830715	834797	838797	237
4	48	4.804734	4.809269	4.813725	4.818103	4.822404	4.826631	4.830784	4.834865	4.838865	241
4	52	804810	809344	813799	818175	822475	826700	830852	834932	838932	245
4	56	804886	809419	813872	818247	822546	826770	830921	834999	838999	249
4	60	804962	809494	813946	818320	822617	826840	830989	835067	839067	253
5	0	4.805038	4.809569	4.814019	4.818392	4.822688	4.826910	4.831058	4.835134	4.839134	257
5	4	805115	809643	814093	818464	822759	826980	831126	835201	839201	261
5	8	805191	809718	814166	818536	822830	827049	831195	835269	839269	265
5	12	805267	809793	814240	818609	822901	827119	831263	835336	839336	269
5	16	4.805343	4.809868	4.814313	4.818681	4.822972	4.827189	4.831332	4.835403	4.839403	273
5	20	805419	809941	814387	818753	823043	827258	831400	835471	839471	277
5	24	805495	810017	814460	818825	823114	827324	831469	835538	839538	281
5	28	805571	810092	814533	818897	823185	827398	831537	835605	839605	285
5	32	4.805647	4.810167	4.814607	4.818969	4.823255	4.827467	4.831606	4.835672	4.839672	289
5	36	805723	810241	814680	819041	823326	827537	831674	835739	839739	293
5	40	805799	810316	814753	819113	823397	827606	831742	835807	839807	297
5	44	805875	810390	814827	819185	823468	827676	831811	835874	839874	301
5	48	4.805951	4.810465	4.814900	4.819257	4.823539	4.827745	4.831879	4.835941	4.839941	305
5	52	806027	81054								

5 Hours.

Log. Havreines. (4)

6 Hours.

Time	Arc.	48"	52"	56"	60"	4"	8"	12"	16"	20"	Time
		87°	88°	89°	90°	91°	92°	93°	94°	95°	
0 0	0	4.83781	4.84177	4.84566	4.84948	4.85324	4.85693	4.86056	4.86412	4.86761	0 4
0 1	1	83787	84183	84572	84954	85330	85695	86052	86408	86758	0 5
0 2	2	83794	84190	84579	84961	85336	85705	86062	86418	86767	0 6
0 3	3	83801	84197	84585	84967	85342	85711	86068	86424	86773	0 7
0 4	4	83808	84203	84591	84973	85349	85717	86074	86430	86779	0 8
0 5	5	83814	84209	84598	84980	85355	85723	86080	86436	86785	0 9
0 6	6	83821	84216	84604	84986	85361	85730	86086	86442	86791	0 10
0 7	7	83827	84222	84611	84992	85367	85736	86092	86448	86797	0 11
0 8	8	83834	84229	84617	84999	85373	85742	86104	86455	86803	0 12
0 9	9	83840	84235	84623	85005	85380	85748	86110	86461	86809	0 13
0 10	10	83847	84242	84630	85011	85386	85754	86116	86467	86815	0 14
0 11	11	83853	84249	84636	85017	85392	85760	86122	86474	86821	0 15
0 12	12	83860	84255	84643	85023	85398	85766	86128	86480	86827	0 16
0 13	13	83867	84262	84649	85030	85404	85772	86134	86486	86833	0 17
0 14	14	83874	84268	84656	85036	85410	85778	86140	86492	86839	0 18
0 15	15	83880	84275	84662	85043	85417	85784	86145	86499	86845	0 19
0 16	16	83887	84281	84668	85049	85423	85790	86151	86505	86851	0 20
0 17	17	83894	84288	84675	85055	85429	85796	86157	86511	86857	0 21
0 18	18	83900	84294	84681	85061	85435	85802	86163	86517	86863	0 22
0 19	19	83907	84301	84688	85068	85441	85809	86169	86523	86869	0 23
0 20	20	83914	84307	84694	85074	85448	85815	86175	86529	86875	0 24
0 21	21	83920	84314	84700	85080	85454	85821	86181	86535	86881	0 25
0 22	22	83927	84320	84707	85087	85460	85827	86187	86541	86887	0 26
0 23	23	83933	84327	84713	85093	85466	85833	86193	86547	86893	0 27
0 24	24	83940	84333	84719	85099	85472	85839	86199	86553	86900	0 28
0 25	25	83947	84340	84726	85105	85478	85845	86205	86559	86906	0 29
0 26	26	83953	84346	84732	85111	85485	85851	86211	86565	86912	0 30
0 27	27	83960	84353	84739	85118	85491	85857	86217	86571	86918	0 31
0 28	28	83966	84359	84745	85124	85497	85863	86223	86577	86924	0 32
0 29	29	83973	84366	84751	85130	85503	85869	86229	86583	86930	0 33
0 30	30	83980	84372	84758	85137	85509	85875	86235	86589	86936	0 34
0 31	31	83986	84379	84764	85143	85515	85881	86241	86595	86942	0 35
0 32	32	83993	84385	84770	85149	85521	85887	86247	86601	86948	0 36
0 33	33	83999	84391	84777	85155	85528	85893	86253	86607	86954	0 37
0 34	34	84006	84398	84783	85161	85534	85899	86259	86613	86960	0 38
0 35	35	84013	84404	84790	85168	85540	85905	86265	86619	86966	0 39
0 36	36	84019	84411	84796	85174	85546	85911	86271	86625	86972	0 40
0 37	37	84026	84417	84802	85180	85552	85917	86277	86631	86978	0 41
0 38	38	84032	84424	84809	85187	85558	85923	86283	86637	86984	0 42
0 39	39	84039	84430	84815	85193	85564	85930	86289	86643	86990	0 43
0 40	40	84045	84437	84821	85199	85571	85936	86295	86649	86996	0 44
0 41	41	84052	84443	84828	85205	85577	85942	86301	86655	87002	0 45
0 42	42	84059	84450	84834	85212	85583	85948	86307	86661	87008	0 46
0 43	43	84065	84456	84840	85218	85589	85954	86313	86667	87014	0 47
0 44	44	84072	84463	84847	85224	85595	85960	86319	86673	87020	0 48
0 45	45	84078	84469	84853	85230	85601	85966	86325	86679	87026	0 49
0 46	46	84085	84476	84859	85237	85607	85972	86331	86685	87032	0 50
0 47	47	84091	84482	84865	85243	85614	85978	86337	86691	87038	0 51
0 48	48	84098	84489	84872	85249	85620	85984	86343	86697	87044	0 52
0 49	49	84105	84495	84878	85255	85626	85990	86349	86703	87050	0 53
0 50	50	84111	84501	84885	85262	85633	85996	86355	86709	87056	0 54
0 51	51	84118	84508	84891	85268	85639	86002	86361	86715	87062	0 55
0 52	52	84124	84514	84897	85274	85645	86008	86367	86721	87068	0 56
0 53	53	84131	84521	84904	85280	85651	86014	86373	86727	87074	0 57
0 54	54	84137	84527	84910	85286	85657	86020	86379	86733	87080	0 58
0 55	55	84144	84534	84916	85293	85663	86026	86385	86739	87086	0 59
0 56	56	84150	84540	84922	85299	85669	86032	86391	86745	87092	0 60
0 57	57	84157	84546	84929	85305	85675	86038	86397	86751	87098	0 61
0 58	58	84164	84553	84935	85311	85681	86044	86403	86757	87104	0 62
0 59	59	84170	84559	84942	85318	85687	86050	86409	86763	87110	0 63
0 60	60	84177	84566	84948	85324	85693	86056	86415	86769	87116	0 64
1 0		8"	4"	0 18"	56"	52"	48"	44"	40"	36"	1 0

18 Hours.

227

17 Hours.

6 Hours.

Log. Haversines. (1)

6 Hours.

Time m	Arc, °	24"	28"	32"	36"	40"	44"	48"	52"	56"	Time h m
		96°	97°	98°	99°	100°	101°	102°	103°	104°	
0	0	4.871073	4.874456	4.877780	4.881045	4.884254	4.887406	4.890503	4.893544	4.896531	0 4
0	4	871130	874512	877835	881099	884307	887458	890554	893595	896581	0 5
0	8	871187	874568	877890	881153	884360	887510	890605	893645	896631	0 6
0	12	871244	874624	877944	881207	884413	887562	890656	893695	896680	0 7
0	16	4.871301	4.874680	4.877999	4.881261	4.884466	4.887614	4.890707	4.893745	4.896729	0 8
0	20	871358	874735	878054	881315	884519	887666	890758	893795	896779	0 9
0	24	871414	874791	878109	881369	884572	887718	890809	893846	896828	0 10
0	28	871471	874847	878164	881423	884625	887770	890860	893896	896877	0 11
0	32	4.871528	4.874903	4.878219	4.881477	4.884677	4.887822	4.890911	4.893946	4.896926	0 12
0	36	871585	874958	878273	881530	884730	887874	890962	893996	896976	0 13
0	40	871641	875014	878328	881584	884783	887926	891013	894046	897025	0 14
0	44	871698	875070	878383	881638	884836	887978	891064	894096	897074	0 15
0	48	4.871755	4.875126	4.878438	4.881692	4.884889	4.888030	4.891115	4.894146	4.897123	0 16
0	52	871811	875181	878492	881745	884942	888082	891166	894196	897172	0 17
0	56	871868	875237	878547	881799	884994	888133	891217	894246	897222	0 18
0	60	871925	875293	878602	881853	885047	888185	891268	894296	897271	0 19
1	0	4.871981	4.875348	4.878656	4.881907	4.885100	4.888237	4.891319	4.894346	4.897320	1 0
1	4	872038	875404	878711	881960	885153	888289	891367	894396	897369	1 1
1	8	872094	875459	878766	882014	885205	888341	891421	894446	897418	1 2
1	12	872151	875515	878820	882068	885258	888393	891472	894496	897467	1 3
1	16	4.872208	4.875571	4.878875	4.882121	4.885311	4.888444	4.891523	4.894546	4.897516	1 4
1	20	872264	875626	878930	882175	885364	888496	891573	894596	897565	1 5
1	24	872321	875682	878984	882228	885416	888548	891624	894646	897614	1 6
1	28	872377	875737	879038	882281	885469	888600	891675	894696	897663	1 7
1	32	4.872434	4.875793	4.879093	4.882336	4.885521	4.888651	4.891726	4.894746	4.897712	1 8
1	36	872490	875848	879148	882389	885574	888703	891777	894796	897761	1 9
1	40	872547	875904	879202	882443	885627	888755	891827	894846	897810	1 10
1	44	872603	875959	879256	882496	885679	888806	891878	894895	897859	1 11
1	48	4.872659	4.876014	4.879311	4.882550	4.885732	4.888858	4.891929	4.894945	4.897908	1 12
1	52	872716	876070	879365	882603	885784	888910	891980	894995	897957	1 13
1	56	872772	876125	879420	882657	885837	888961	892030	895045	898006	1 14
2	0	872829	876181	879474	882710	885889	889013	892081	895095	898055	1 15
2	4	4.872885	4.876236	4.879539	4.882764	4.885942	4.889064	4.892123	4.895144	4.898104	2 0
2	8	872941	876291	879583	882817	885994	889116	892182	895194	898153	2 1
2	12	872998	876347	879637	882871	886047	889167	892233	895244	898201	2 2
2	16	873054	876402	879692	882924	886099	889219	892284	895294	898250	2 3
2	20	4.873110	4.876457	4.879746	4.882977	4.886152	4.889271	4.892334	4.895343	4.898299	2 4
2	24	873166	876513	879800	883031	886204	889322	892385	895393	898348	2 5
2	28	873223	876568	879855	883084	886257	889374	892435	895443	898397	2 6
2	32	873279	876623	879909	883137	886309	889425	892486	895492	898446	2 7
2	36	4.873335	4.876678	4.879963	4.883191	4.886362	4.889476	4.892536	4.895542	4.898494	2 8
2	40	873391	876734	880018	883244	886414	889528	892587	895592	898543	2 9
2	44	873448	876789	880072	883297	886466	889579	892637	895641	898592	2 10
2	48	873504	876844	880126	883351	886519	889631	892688	895691	898641	2 11
2	52	4.873560	4.876899	4.880180	4.883404	4.886571	4.889682	4.892738	4.895741	4.898689	2 12
2	56	873616	876954	880234	883457	886623	889734	892789	895790	898738	2 13
3	0	873672	877010	880289	883510	886676	889785	892839	895840	898787	2 14
3	4	873728	877065	880343	883564	886728	889836	892890	895889	898835	2 15
3	8	4.873784	4.877120	4.880397	4.883617	4.886780	4.889888	4.892940	4.895939	4.898884	2 16
3	12	873840	877175	880451	883670	886832	889939	892991	895988	898933	2 17
3	16	873896	877230	880505	883723	886885	889990	893042	896038	898981	2 18
3	20	873952	877285	880559	883776	886937	890043	893092	896087	899030	2 19
3	24	4.874008	4.877340	4.880613	4.883829	4.886989	4.890093	4.893142	4.896137	4.899078	2 20
3	28	874065	877395	880667	883883	887041	890144	893192	896186	899127	2 21
3	32	874120	877450	880721	883936	887093	890195	893243	896236	899176	2 22
3	36	874176	877505	880776	883989	887145	890247	893293	896285	899224	2 23
3	40	4.874232	4.877560	4.880830	4.884042	4.887198	4.890298	4.893343	4.896335	4.899273	2 24
3	44	874288	877615	880884	884095	887250	890349	893394	896384	899321	2 25
3	48	874344	877670	880938	884148	887302	890400	893444	896433	899370	2 26
3	52	874400	877725	880992	884201	887354	890451	893494	896483	899418	2 27
3	56	4.874456	4.877780	4.881045	4.884254	4.887406	4.890503	4.893544	4.896531	4.899467	2 28
3	60	874512	877835	881153	884360	887510	890605	893645	896631	899567	2 29

17 Hours.

17 Hours.

		0 ^m	4 ^m	8 ^m	12 ^m	16 ^m	20 ^m	24 ^m	28 ^m	32 ^m		
Time	Arc.	105°	106°	107°	108°	109°	110°	111°	112°	113°	s	m
0	0	4.899467	4.902349	4.905179	4.907958	4.910686	4.913364	4.915994	4.918574	4.921107	0	4
4	1	899515	902396	905225	908003	910731	913409	916037	918617	921148	56	3
8	2	899564	902444	905272	908049	910776	913453	916080	918659	921190	52	3
12	3	899612	902491	905319	908095	910821	913497	916124	918702	921232	48	3
16	4	4.899660	4.902539	4.905366	4.908141	4.910866	4.913541	4.916167	4.918744	4.921274	44	3
20	5	899709	902586	905412	908187	910911	913585	916211	918787	921315	40	3
24	6	899757	902634	905459	908233	910956	913630	916254	918830	921357	36	3
18	7	899806	902681	905506	908278	911001	913674	916297	918872	921399	32	3
2	8	4.899854	4.902729	4.905552	4.908324	4.911046	4.913718	4.916341	4.918915	4.921441	28	3
6	9	899902	902776	905599	908370	911091	913762	916384	918957	921482	24	3
10	10	899951	902824	905645	908416	911136	913806	916427	919000	921524	20	3
14	11	899999	902871	905692	908462	911181	913850	916470	919042	921566	16	3
18	12	4.900047	4.902919	4.905739	4.908507	4.911226	4.913894	4.916514	4.919084	4.921607	12	3
22	13	900095	902966	905785	908553	911271	913938	916557	919127	921649	8	3
26	14	900144	903014	905832	908599	911315	913982	916600	919169	921691	4	3
30	15	900192	903061	905878	908644	911360	914026	916643	919212	921732	0	3
34	16	4.900240	4.903108	4.905925	4.908690	4.911405	4.914070	4.916687	4.919254	4.921774	56	2
38	17	900288	903156	905971	908736	911450	914114	916730	919297	921815	52	2
42	18	900337	903203	906018	908781	911495	914158	916773	919339	921857	48	2
46	19	900385	903250	906064	908827	911540	914202	916816	919381	921899	44	2
50	20	4.900433	4.903298	4.906111	4.908873	4.911584	4.914246	4.916859	4.919424	4.921940	40	2
54	21	900481	903345	906157	908918	911629	914290	916902	919466	921982	36	2
58	22	900529	903392	906204	908964	911674	914334	916945	919508	922023	32	2
62	23	900578	903440	906250	909009	911719	914378	916989	919551	922065	28	2
66	24	4.900626	4.903487	4.906296	4.909055	4.911763	4.914422	4.917032	4.919593	4.922106	24	2
70	25	900674	903534	906343	909101	911808	914466	917075	919635	922148	20	2
74	26	900722	903581	906389	909146	911853	914510	917118	919677	922189	16	2
78	27	900770	903628	906435	909192	911897	914554	917161	919720	922231	12	2
82	28	4.900818	4.903676	4.906482	4.909237	4.911942	4.914598	4.917204	4.919762	4.922272	8	2
86	29	900866	903723	906528	909283	911987	914641	917247	919804	922313	4	2
90	30	900914	903770	906574	909328	912031	914685	917290	919846	922355	0	2
94	31	900962	903817	906621	909374	912076	914729	917333	919883	922396	56	1
98	32	4.901010	4.903864	4.906667	4.909419	4.912121	4.914773	4.917376	4.919931	4.922438	52	1
102	33	901058	903911	906713	909464	912165	914817	917419	919973	922479	48	1
106	34	901106	903959	906760	909510	912210	914860	917462	920015	922520	44	1
110	35	901154	904006	906806	909555	912254	914904	917505	920057	922562	40	1
114	36	4.901202	4.904053	4.906852	4.909601	4.912299	4.914948	4.917548	4.920099	4.922603	36	1
118	37	901250	904100	906898	909646	912344	914992	917591	920141	922644	32	1
122	38	901298	904147	906945	909691	912388	915035	917634	920184	922686	28	1
126	39	901346	904194	906991	909737	912433	915079	917676	920226	922727	24	1
130	40	4.901394	4.904241	4.907037	4.909782	4.912477	4.915123	4.917719	4.920268	4.922768	20	1
134	41	901442	904288	907083	909827	912522	915166	917762	920310	922810	16	1
138	42	901489	904335	907129	909873	912566	915210	917805	920352	922851	12	1
142	43	901537	904382	907175	909918	912611	915254	917848	920394	922892	8	1
146	44	4.901585	4.904429	4.907222	4.909963	4.912655	4.915297	4.917891	4.920437	4.922933	4	1
150	45	901633	904476	907268	910009	912699	915341	917934	920478	922975	0	1
154	46	901681	904523	907314	910054	912744	915385	917976	920520	923016	56	0
158	47	901729	904570	907360	910099	912788	915428	918019	920562	923057	52	0
162	48	4.901776	4.904617	4.907406	4.910144	4.912833	4.915472	4.918062	4.920604	4.923098	48	0
166	49	901824	904664	907452	910190	912877	915515	918105	920646	923139	44	0
170	50	901872	904711	907498	910235	912921	915559	918147	920688	923180	40	0
174	51	901920	904757	907544	910280	912966	915602	918190	920730	923222	36	0
178	52	4.901967	4.904804	4.907590	4.910325	4.913010	4.915646	4.918233	4.920772	4.923263	32	0
182	53	902015	904851	907636	910370	913055	915689	918276	920814	923304	28	0
186	54	902063	904898	907682	910415	913099	915733	918318	920855	923345	24	0
190	55	902110	904945	907728	910461	913143	915776	918361	920897	923386	20	0
194	56	4.902158	4.904992	4.907774	4.910506	4.913187	4.915820	4.918404	4.920939	4.923427	16	0
198	57	902206	905038	907820	910551	913232	915863	918446	920981	923468	12	0
202	58	902253	905085	907866	910596	913276	915907	918489	921023	923509	8	0
206	59	902301	905132	907912	910641	913320	915950	918532	921065	923550	4	0
210	60	4.902349	4.905179	4.907958	4.910686	4.913364	4.915994	4.918574	4.921107	4.923591	0	0
		56 ^m	52 ^m	48 ^m	44 ^m	40 ^m	36 ^m	32 ^m	28 ^m	24 ^m	Time	

7 Hours.

Log. Haversines. (6)

8 Hours.

		36"	40"	44"	48"	52"	56"	8° 0'	4"	8"		
Time	Arc.	114°	115°	116°	117°	118°	119°	120°	121°	122°	Time	Arc.
0 0	0	4.923591	4.926029	4.928420	4.930766	4.933066	4.935320	4.937531	4.939697	4.941819	0 4	0
0 4	1	923632	926069	928460	930804	933103	935358	937567	939732	941854	0 4	4
0 8	2	923673	926110	928499	930843	933141	935395	937603	939768	941889	0 8	5
0 12	3	923714	926150	928539	930882	933179	935432	937640	939804	941924	0 12	6
0 16	4	4.923755	4.926190	4.928578	4.930920	4.933217	4.935469	4.937676	4.939840	4.941959	0 16	7
0 20	5	923796	926230	928618	930959	933255	935506	937713	939875	941994	0 20	8
0 24	6	923837	926270	928657	930998	933293	935543	937749	939911	942036	0 24	9
0 28	7	923878	926311	928696	931036	933331	935580	937786	939947	942064	0 28	10
0 32	8	4.923919	4.926351	4.928736	4.931075	4.933369	4.935618	4.937822	4.939982	4.942099	0 32	11
0 36	9	923960	926391	928775	931114	933407	935655	937858	940018	942134	0 36	12
0 40	10	924001	926431	928814	931153	933444	935692	937895	940053	942169	0 40	13
0 44	11	924042	926471	928854	931191	933482	935729	937931	940089	942204	0 44	14
0 48	12	4.924083	4.926511	4.928893	4.931229	4.933520	4.935766	4.937967	4.940125	4.942239	0 48	15
0 52	13	924124	926551	928932	931268	933558	935803	938004	940160	942273	0 52	16
0 56	14	924164	926591	928972	931306	933596	935840	938040	940196	942308	0 56	17
1 0	15	924205	926631	929011	931345	933633	935877	938076	940231	942343	1 0	18
1 4	16	4.924246	4.926671	4.929050	4.931383	4.933671	4.935914	4.938113	4.940267	4.942378	1 4	19
1 8	17	924287	926711	929090	931422	933709	935951	938149	940303	942413	1 8	20
1 12	18	924328	926751	929129	931460	933747	935988	938185	940338	942448	1 12	21
1 16	19	924368	926791	929168	931499	933784	936025	938221	940374	942483	1 16	22
1 20	20	4.924409	4.926831	4.929207	4.931537	4.933822	4.936062	4.938258	4.940409	4.942517	1 20	23
1 24	21	924450	926871	929246	931576	933860	936099	938294	940445	942552	1 24	24
1 28	22	924491	926911	929286	931614	933898	936136	938330	940480	942587	1 28	25
1 32	23	924531	926951	929325	931653	933935	936173	938366	940515	942621	1 32	26
1 36	24	4.924572	4.926991	4.929364	4.931691	4.933973	4.936210	4.938402	4.940551	4.942656	1 36	27
1 40	25	924613	927031	929403	931729	934010	936247	938438	940586	942691	1 40	28
1 44	26	924653	927071	929442	931768	934048	936284	938475	940622	942725	1 44	29
1 48	27	924694	927111	929481	931806	934086	936320	938511	940657	942760	1 48	30
1 52	28	4.924735	4.927151	4.929521	4.931845	4.934123	4.936357	4.938547	4.940693	4.942795	1 52	31
1 56	29	924775	927191	929560	931883	934161	936394	938583	940728	942830	1 56	32
2 0	30	924816	927231	929599	931921	934199	936431	938619	940763	942864	2 0	33
2 4	31	924857	927270	929638	931960	934236	936468	938655	940799	942899	2 4	34
2 8	32	4.924897	4.927310	4.929677	4.931998	4.934274	4.936505	4.938691	4.940834	4.942933	2 8	35
2 12	33	924938	927350	929716	932036	934311	936541	938727	940869	942968	2 12	36
2 16	34	924979	927390	929755	932075	934349	936578	938763	940905	943003	2 16	37
2 20	35	925019	927430	929794	932113	934386	936615	938799	940940	943037	2 20	38
2 24	36	4.925060	4.927469	4.929833	4.932151	4.934424	4.936652	4.938836	4.940975	4.943073	2 24	39
2 28	37	925100	927509	929872	932189	934461	936689	938872	941011	943106	2 28	40
2 32	38	925141	927549	929911	932228	934499	936725	938908	941046	943141	2 32	41
2 36	39	925181	927589	929950	932266	934536	936762	938944	941081	943176	2 36	42
2 40	40	4.925222	4.927628	4.929989	4.932304	4.934574	4.936799	4.938980	4.941117	4.943210	2 40	43
2 44	41	925262	927668	930028	932342	934611	936835	939016	941152	943245	2 44	44
2 48	42	925303	927708	930067	932380	934649	936872	939051	941187	943279	2 48	45
2 52	43	925343	927748	930106	932419	934686	936909	939087	941222	943314	2 52	46
2 56	44	4.925384	4.927787	4.930145	4.932457	4.934723	4.936946	4.939123	4.941257	4.943348	2 56	47
3 0	45	925424	927827	930184	932495	934761	936982	939159	941293	943383	3 0	48
3 4	46	925465	927867	930223	932533	934798	937019	939195	941328	943417	3 4	49
3 8	47	925505	927906	930261	932571	934836	937055	939231	941363	943452	3 8	50
3 12	48	4.925545	4.927946	4.930300	4.932609	4.934873	4.937092	4.939267	4.941398	4.943486	3 12	51
3 16	49	925586	927985	930339	932647	934910	937129	939303	941433	943520	3 16	52
3 20	50	925626	928025	930378	932685	934948	937165	939339	941468	943555	3 20	53
3 24	51	925666	928065	930417	932723	934985	937202	939375	941504	943589	3 24	54
3 28	52	4.925707	4.928104	4.930456	4.932762	4.935022	4.937238	4.939410	4.941533	4.943612	3 28	55
3 32	53	925747	928144	930494	932800	935060	937275	939446	941574	943652	3 32	56
3 36	54	925787	928183	930533	932838	935097	937312	939482	941609	943692	3 36	57
3 40	55	925828	928223	930572	932876	935134	937348	939518	941644	943727	3 40	58
3 44	56	4.925868	4.928262	4.930611	4.932914	4.935171	4.937385	4.939554	4.941679	4.943761	3 44	59
3 48	57	925908	928301	930650	932952	935209	937421	939589	941714	943796	3 48	60
3 52	58	925949	928341	930688	932990	935246	937458	939625	941749	943830	3 52	61
3 56	59	925989	928381	930727	933028	935283	937494	939661	941784	943864	3 56	62
4 0	60	4.926029	4.928420	4.930766	4.933066	4.935320	4.937531	4.939697	4.941819	4.943898	4 0	63
		20"	16"	12"	8"	4"	0" 16"	56"	52"	48"		

8 Hours.

Log. Haversine. (i)

8 Hours.

		12 ^m	16 ^m	20 ^m	24 ^m	28 ^m	32 ^m	36 ^m	40 ^m	44 ^m	
Time	Arg.	123°	124°	125°	126°	127°	128°	129°	130°	131°	Time
0 0	0	4.943898	4.945935	4.947939	4.949881	4.951791	4.953660	4.955488	4.957276	4.959023	0 4
0 1	1	943933	945968	947962	949913	951823	953691	955518	957305	959052	0 5
0 2	2	943967	946002	947995	949945	951854	953722	955548	957335	959080	0 6
0 3	3	944001	946036	948027	949977	951886	953753	955579	957364	959109	0 7
0 4	4	944036	946069	948060	949909	951917	953783	955609	957393	959138	0 8
0 5	5	944070	946103	948093	950042	951948	953814	955639	957423	959167	0 9
0 6	6	944104	946136	948126	950074	951980	953845	955669	957457	959195	0 10
0 7	7	944138	946170	948159	950106	952011	953876	955699	957488	959224	0 11
0 8	8	944172	946203	948192	950138	952043	953906	955729	957511	959253	0 12
0 9	9	944207	946237	948224	950170	952074	953937	955759	957540	959281	0 13
0 10	10	944241	946270	948257	950202	952105	953968	955789	957570	959310	0 14
0 11	11	944275	946304	948290	950234	952137	953998	955819	957599	959339	0 15
0 12	12	944309	946337	948323	950266	952168	954029	955849	957628	959367	0 16
0 13	13	944343	946370	948355	950298	952200	954060	955879	957658	959396	0 17
0 14	14	944377	946404	948388	950330	952231	954090	955909	957687	959425	0 18
0 15	15	944411	946437	948421	950362	952262	954121	955939	957716	959453	0 19
0 16	16	944446	946471	948453	950394	952294	954152	955969	957746	959482	0 20
0 17	17	944480	946504	948486	950426	952325	954182	955999	957775	959511	0 21
0 18	18	944514	946538	948519	950458	952356	954213	956029	957804	959539	0 22
0 19	19	944548	946571	948552	950490	952387	954243	956059	957833	959568	0 23
0 20	20	944582	946604	948584	950522	952419	954274	956089	957863	959596	0 24
0 21	21	944616	946638	948617	950554	952450	954305	956118	957892	959625	0 25
0 22	22	944650	946671	948649	950586	952481	954335	956148	957921	959653	0 26
0 23	23	944684	946704	948682	950618	952512	954366	956178	957950	959682	0 27
0 24	24	944718	946738	948715	950650	952544	954396	956208	957979	959711	0 28
0 25	25	944752	946771	948747	950682	952575	954427	956238	958009	959739	0 29
0 26	26	944786	946804	948780	950714	952606	954457	956268	958038	959768	0 30
0 27	27	944820	946837	948812	950746	952637	954488	956298	958067	959796	0 31
0 28	28	944854	946871	948845	950777	952668	954518	956327	958096	959825	0 32
0 29	29	944888	946904	948878	950809	952700	954549	956357	958125	959853	0 33
0 30	30	944922	946937	948910	950841	952731	954579	956387	958154	959881	0 34
0 31	31	944956	946970	948943	950873	952762	954610	956417	958183	959910	0 35
0 32	32	944990	947004	948975	950905	952793	954640	956447	958212	959938	0 36
0 33	33	945024	947037	949008	950937	952824	954671	956476	958242	959967	0 37
0 34	34	945058	947070	949040	950968	952855	954701	956506	958271	959995	0 38
0 35	35	945092	947103	949073	951000	952886	954731	956536	958300	960024	0 39
0 36	36	945125	947136	949105	951032	952917	954762	956566	958329	960052	0 40
0 37	37	945159	947169	949138	951064	952949	954792	956595	958358	960080	0 41
0 38	38	945193	947203	949170	951096	952980	954823	956625	958387	960109	0 42
0 39	39	945227	947236	949202	951127	953011	954853	956655	958416	960137	0 43
0 40	40	945261	947269	949235	951159	953042	954883	956684	958445	960165	0 44
0 41	41	945295	947302	949267	951191	953073	954914	956714	958474	960194	0 45
0 42	42	945328	947335	949300	951222	953104	954944	956744	958503	960222	0 46
0 43	43	945362	947368	949332	951254	953135	954974	956773	958532	960250	0 47
0 44	44	945396	947401	949364	951286	953166	955005	956803	958561	960279	0 48
0 45	45	945430	947434	949397	951317	953197	955035	956833	958590	960307	0 49
0 46	46	945464	947467	949429	951349	953228	955065	956862	958619	960335	0 50
0 47	47	945497	947500	949461	951381	953259	955096	956892	958648	960364	0 51
0 48	48	945531	947533	949494	951412	953290	955126	956921	958677	960392	0 52
0 49	49	945565	947566	949526	951444	953321	955156	956951	958706	960420	0 53
0 50	50	945598	947600	949558	951476	953351	955186	956981	958734	960448	0 54
0 51	51	945632	947633	949591	951507	953382	955217	957010	958763	960477	0 55
0 52	52	945666	947666	949623	951539	953413	955247	957040	958792	960505	0 56
0 53	53	945699	947699	949655	951570	953444	955277	957069	958821	960533	0 57
0 54	54	945733	947731	949688	951602	953475	955307	957099	958850	960561	0 58
0 55	55	945767	947764	949720	951634	953506	955337	957128	958879	960589	0 59
0 56	56	945800	947797	949752	951665	953537	955368	957158	958908	960618	0 60
0 57	57	945834	947830	949784	951697	953568	955398	957187	958936	960646	0 1
0 58	58	945868	947863	949816	951728	953598	955428	957217	958965	960674	0 2
0 59	59	945901	947896	949849	951760	953629	955458	957246	958994	960702	0 3
0 60	60	945935	947929	949881	951791	953660	955488	957276	959023	960730	0 4
		44 ^m	40 ^m	36 ^m	32 ^m	28 ^m	24 ^m	20 ^m	16 ^m	12 ^m	

15 Hours.

229

15 Hours.

8 Hours.

Log. Haversines. (c)

9 Hours.

Time m s	Arc.	48"	52"	56"	9° 0'	4"	8"	12"	16"	Arc.	Time m s
		132°	133°	134°	135°	136°	137°	138°	139°		
0 0	0	4.960730	4.962398	4.964026	4.965615	4.967166	4.968678	4.970152	4.971588	60	0 4
0 4	1	960758	962425	964053	965641	967191	968703	970176	971611	59	56 3
0 8	2	960786	962453	964080	965668	967217	968728	970200	971635	58	52 3
0 12	3	960814	962480	964106	965694	967242	968752	970224	971658	57	48 3
0 16	4	4.960843	4.962508	4.964133	4.965710	4.967268	4.968777	4.970249	4.971682	56	44 3
0 20	5	960871	962535	964160	965746	967293	968802	970273	971706	55	40 3
0 24	6	960899	962562	964187	965773	967319	968827	970297	971739	54	36 3
0 28	7	960927	962590	964213	965798	967344	968852	970321	971753	53	32 3
0 32	8	4.960955	4.962617	4.964240	4.965824	4.967370	4.968877	4.970345	4.971776	52	28 3
0 36	9	960983	962644	964267	965850	967395	968901	970369	971800	51	24 3
0 40	10	961011	962672	964294	965876	967420	968926	970394	971823	50	20 3
0 44	11	961039	962699	964320	965902	967446	968951	970418	971847	49	16 3
0 48	12	4.961067	4.962727	4.964347	4.965928	4.967471	4.968976	4.970442	4.971870	48	12 3
0 52	13	961095	962754	964374	965955	967497	969000	970466	971894	47	8 3
0 56	14	961123	962781	964400	965981	967522	969025	970490	971917	46	4 3
1 0	15	961151	962808	964427	966007	967547	969050	970514	971941	45	0 3
1 4	16	4.961179	4.962836	4.964454	4.966033	4.967573	4.969075	4.970538	4.971964	44	56 2
1 8	17	961207	962863	964480	966059	967598	969099	970562	971988	43	52 2
1 12	18	961235	962890	964507	966085	967623	969124	970586	972011	42	48 2
1 16	19	961263	962918	964534	966110	967649	969149	970610	972034	41	44 2
1 20	20	4.961290	4.962945	4.964560	4.966136	4.967674	4.969173	4.970635	4.972058	40	40 2
1 24	21	961318	962972	964587	966162	967699	969198	970659	972081	39	36 2
1 28	22	961346	962999	964613	966188	967725	969223	970683	972105	38	32 2
1 32	23	961374	963027	964640	966214	967750	969247	970707	972128	37	28 2
1 36	24	4.961402	4.963054	4.964666	4.966240	4.967775	4.969272	4.970731	4.972151	36	24 2
1 40	25	961430	963081	964693	966266	967800	969297	970755	972175	35	20 2
1 44	26	961458	963108	964719	966292	967826	969321	970779	972198	34	16 2
1 48	27	961485	963135	964746	966318	967851	969346	970803	972221	33	12 2
1 52	28	4.961513	4.963162	4.964773	4.966344	4.967876	4.969370	4.970826	4.972245	32	8 2
1 56	29	961541	963190	964799	966370	967901	969395	970850	972268	31	4 2
2 0	30	961569	963217	964826	966395	967927	969420	970874	972291	30	0 2
2 4	31	961597	963244	964852	966421	967952	969444	970898	972315	29	56 1
2 8	32	4.961624	4.963271	4.964878	4.966447	4.967977	4.969469	4.970922	4.972338	28	52 1
2 12	33	961652	963298	964905	966473	968002	969493	970946	972361	27	48 1
2 16	34	961680	963325	964931	966499	968027	969518	970970	972384	26	44 1
2 20	35	961708	963352	964958	966524	968052	969542	970994	972408	25	40 1
2 24	36	4.961735	4.963379	4.964984	4.966550	4.968078	4.969567	4.971018	4.972431	24	36 1
2 28	37	961763	963406	965011	966576	968103	969591	971042	972454	23	32 1
2 32	38	961791	963434	965037	966602	968128	969616	971065	972477	22	28 1
2 36	39	961819	963461	965063	966628	968153	969640	971089	972501	21	24 1
2 40	40	4.961846	4.963488	4.965090	4.966653	4.968178	4.969665	4.971113	4.972524	20	20 1
2 44	41	961874	963515	965116	966679	968203	969689	971137	972547	19	16 1
2 48	42	961902	963542	965143	966705	968228	969714	971161	972570	18	12 1
2 52	43	961929	963569	965169	966730	968253	969738	971185	972593	17	8 1
2 56	44	4.961957	4.963596	4.965195	4.966756	4.968278	4.969762	4.971208	4.972617	16	4 1
3 0	45	961985	963623	965222	966782	968303	969787	971232	972640	15	0 1
3 4	46	962013	963650	965248	966807	968328	969811	971256	972663	14	56 0
3 8	47	962040	963677	965274	966833	968353	969836	971280	972686	13	52 0
3 12	48	4.962067	4.963704	4.965301	4.966859	4.968379	4.969860	4.971303	4.972709	12	48 0
3 16	49	962095	963730	965327	966884	968404	969884	971327	972732	11	44 0
3 20	50	962123	963757	965353	966910	968429	969909	971351	972755	10	40 0
3 24	51	962150	963784	965379	966936	968453	969933	971375	972778	9	36 0
3 28	52	4.962178	4.963811	4.965406	4.966961	4.968478	4.969957	4.971398	4.972802	8	32 0
3 32	53	962205	963838	965432	966987	968503	969982	971422	972825	7	28 0
3 36	54	962233	963865	965458	967012	968528	970006	971446	972848	6	24 0
3 40	55	962260	963892	965484	967038	968553	970030	971469	972871	5	20 0
3 44	56	4.962288	4.963919	4.965511	4.967064	4.968578	4.970055	4.971493	4.972894	4	16 0
3 48	57	962315	963946	965537	967089	968603	970079	971517	972917	3	12 0
3 52	58	962343	963972	965563	967115	968628	970103	971540	972940	2	8 0
3 56	59	962370	963999	965589	967140	968653	970127	971564	972963	1	4 0
4 0	60	4.962398	4.964026	4.965615	4.967166	4.968678	4.970152	4.971588	4.972986	0	0 0
Time	Arc.	227°	226°	225°	224°	223°	222°	221°	220°	Arc.	Time
		8"	4"	0" 15"	56"	52"	48"	44"	40"		

13 Hours.

14 Hours.

9 Hours

Log. Haveraine. (1)

9 Hours.

Time m s	Arc.	20"	24"	28"	32"	36"	40"	44"	48"	Arc.	Time m s
		140°	141°	142°	143°	144°	145°	146°	147°		
0 0	0	4.973986	4.974347	4.975670	4.976957	4.978206	4.979419	4.980596	4.981737	60	0 4
0 4	1	9771009	974369	975693	976978	978227	979439	980616	981756	59	56 3
0 8	3	977032	974391	975713	976999	978247	979459	980633	981774	58	52 3
0 12	3	977053	974414	975735	977020	978268	979479	980654	981793	57	48 3
0 16	4	4.977078	4.974436	4.975757	4.977041	4.978288	4.979499	4.980673	4.981812	56	44 3
0 20	5	977101	974458	975779	977062	978309	979519	980693	981830	55	40 3
0 24	6	977124	974481	975800	977083	978329	979539	980712	981849	54	36 3
0 28	7	977146	974503	975822	977104	978350	979559	980731	981868	53	32 3
0 32	8	4.977169	4.974525	4.975844	4.977125	4.978370	4.979578	4.980750	4.981886	52	28 3
0 36	9	977192	974547	975865	977146	978391	979598	980770	981905	51	24 3
0 40	10	977215	974570	975887	977167	978411	979618	980789	981924	50	20 3
0 44	11	977238	974592	975909	977188	978431	979638	980808	981942	49	16 3
0 48	12	4.977261	4.974614	4.975930	4.977209	4.978452	4.979658	4.980827	4.981961	48	12 3
0 52	13	977284	974636	975952	977230	978472	979678	980846	981979	47	8 3
0 56	14	977307	974659	975974	977251	978493	979697	980866	981998	46	4 3
1 0	15	977329	974681	975995	977272	978513	979717	980885	982016	45	0 3
1 4	16	4.977352	4.974703	4.976017	4.977293	4.978533	4.979737	4.980904	4.982033	44	56 2
1 8	17	977375	974725	976038	977314	978554	979757	980923	982054	43	52 2
1 12	18	977398	974747	976060	977335	978574	979776	980942	982072	42	48 2
1 16	19	977421	974770	976081	977356	978594	979796	980961	982091	41	44 2
1 20	20	4.977443	4.974792	4.976103	4.977377	4.978615	4.979816	4.980980	4.982109	40	40 2
1 24	21	977466	974814	976124	977398	978635	979835	981000	982128	39	36 2
1 28	22	977489	974836	976146	977419	978655	979855	981019	982146	38	32 2
1 32	23	977512	974858	976168	977440	978676	979875	981038	982165	37	28 2
1 36	24	4.977535	4.974880	4.976189	4.977461	4.978696	4.979895	4.981057	4.982183	36	24 2
1 40	25	977557	974902	976211	977482	978716	979914	981076	982202	35	20 2
1 44	26	977580	974925	976232	977503	978736	979934	981095	982220	34	16 2
1 48	27	977603	974947	976254	977523	978757	979954	981114	982238	33	12 2
1 52	28	4.977625	4.974969	4.976275	4.977544	4.978777	4.979973	4.981133	4.982257	32	8 2
1 56	29	977648	974991	976296	977565	978797	979993	981152	982275	31	4 2
2 0	30	977671	975013	976318	977586	978817	980012	981171	982294	30	0 2
2 4	31	977693	975035	976339	977607	978838	980032	981190	982312	29	56 1
2 8	32	4.977716	4.975057	4.976361	4.977628	4.978858	4.980052	4.981209	4.982331	28	52 1
2 12	33	977739	975079	976382	977648	978878	980071	981228	982349	27	48 1
2 16	34	977761	975101	976404	977669	978898	980091	981247	982367	26	44 1
2 20	35	977784	975123	976425	977690	978918	980110	981266	982386	25	40 1
2 24	36	4.977807	4.975145	4.976446	4.977711	4.978939	4.980130	4.981285	4.982404	24	36 1
2 28	37	977829	975167	976468	977732	978959	980149	981304	982422	23	32 1
2 32	38	977852	975189	976489	977752	978979	980169	981323	982441	22	28 1
2 36	39	977874	975211	976510	977773	978999	980189	981342	982459	21	24 1
2 40	40	4.977897	4.975233	4.976532	4.977794	4.979019	4.980208	4.981361	4.982477	20	20 1
2 44	41	977920	975255	976553	977814	979039	980228	981380	982496	19	16 1
2 48	42	977942	975277	976574	977835	979059	980247	981399	982514	18	12 1
2 52	43	977965	975299	976596	977856	979079	980267	981417	982532	17	8 1
2 56	44	4.977987	4.975321	4.976617	4.977877	4.979100	4.980286	4.981436	4.982551	16	4 1
3 0	45	978010	975343	976638	977897	979120	980305	981455	982569	15	0 1
3 4	46	978032	975365	976660	977918	979140	980325	981474	982587	14	56 0
3 8	47	978055	975386	976681	977939	979160	980344	981493	982605	13	52 0
3 12	48	4.978077	4.975408	4.976702	4.977959	4.979180	4.980364	4.981512	4.982624	12	48 0
3 16	49	978100	975430	976723	977980	979200	980383	981530	982642	11	44 0
3 20	50	978122	975452	976745	978001	979220	980403	981549	982660	10	40 0
3 24	51	978145	975474	976766	978021	979240	980422	981568	982678	9	36 0
3 28	52	4.978167	4.975496	4.976787	4.978042	4.979260	4.980441	4.981587	4.982696	8	32 0
3 32	53	978190	975518	976808	978062	979280	980461	981606	982715	7	28 0
3 36	54	978212	975539	976830	978083	979300	980480	981624	982733	6	24 0
3 40	55	978235	975561	976851	978104	979320	980500	981643	982751	5	20 0
3 44	56	4.978257	4.975583	4.976872	4.978124	4.979340	4.980519	4.981662	4.982769	4	16 0
3 48	57	978279	975605	976893	978145	979360	980538	981681	982787	3	12 0
3 52	58	978302	975626	976914	978165	979380	980558	981699	982805	2	8 0
3 56	59	978324	975648	976935	978186	979400	980577	981718	982823	1	4 0
4 0	60	4.978347	4.975670	4.976957	4.978206	4.979419	4.980596	4.981737	4.982843	0	0 0
m s	Arc.	219°	218°	217°	216°	215°	214°	213°	212°	Arc.	Time
Time		86"	32"	28"	24"	20"	16"	12"	8"		

14 Hours.

230

14 Hours.

9 Hours.

Log. Haversines. (6)

10 Hours.

Time m s	Arc.	52°	56°	10° 0'	4°	8°	12°	16°	20°	Arc.	Time m s
		148°	149°	150°	151°	152°	153°	154°	155°		
0 0	0	4.982842	4.983910	4.984944	4.985942	4.986904	4.987831	4.988714	4.989581	60	0 4
0 1	1	982860	983928	984961	985958	986920	987847	988738	989595	59	56 3
0 2	2	982878	983945	984978	985974	986936	987862	988753	989609	58	52 3
0 3	3	982896	983963	984994	985991	986951	987877	988768	989623	57	48 3
0 15	4	4.982914	4.983980	4.985011	4.986007	4.986967	4.987892	4.988781	4.989637	56	44 3
0 20	5	982932	983998	985028	986023	986983	987907	988797	989651	55	40 3
0 24	6	982950	984015	985045	986039	986998	987922	988811	989665	54	36 3
0 28	7	982968	984033	985062	986056	987014	987937	988826	989679	53	32 3
0 32	8	4.982986	4.984050	4.985079	4.986071	4.987030	4.987952	4.988840	4.989693	52	28 3
0 36	9	983004	984068	985096	986088	987045	987968	988855	989707	51	24 3
0 40	10	983022	984085	985112	986104	987061	987983	988869	989721	50	20 3
0 44	11	983040	984103	985129	986121	987077	987998	988884	989735	49	16 3
0 48	12	4.983058	4.984120	4.985146	4.986137	4.987092	4.988013	4.988898	4.989749	48	12 3
0 52	13	983076	984137	985163	986153	987108	988028	988913	989763	47	8 3
0 56	14	983094	984155	985180	986169	987124	988043	988927	989777	46	4 3
1 0	15	983112	984172	985196	986185	987139	988058	988942	989790	45	0 3
1 4	16	4.983130	4.984189	4.985213	4.986202	4.987155	4.988073	4.988956	4.989804	44	56 3
1 8	17	983148	984207	985230	986218	987170	988088	988970	989818	43	52 3
1 12	18	983166	984224	985247	986234	987186	988103	988985	989833	42	48 3
1 16	19	983184	984242	985264	986250	987202	988118	988999	989846	41	44 3
1 20	20	4.983202	4.984259	4.985280	4.986266	4.987217	4.988133	4.989014	4.989860	40	40 3
1 24	21	983220	984276	985297	986282	987233	988148	989028	989873	39	36 3
1 28	22	983238	984293	985314	986299	987248	988163	989043	989887	38	32 3
1 32	23	983256	984311	985330	986315	987264	988178	989057	989901	37	28 3
1 36	24	4.983273	4.984328	4.985347	4.986331	4.987279	4.988193	4.989071	4.989915	36	24 3
1 40	25	983291	984345	985364	986347	987295	988208	989085	989929	35	20 3
1 44	26	983309	984363	985380	986363	987310	988222	989100	989942	34	16 3
1 48	27	983327	984380	985397	986379	987326	988237	989114	989956	33	12 3
1 52	28	4.983345	4.984397	4.985414	4.986395	4.987341	4.988252	4.989128	4.989970	32	8 3
1 56	29	983363	984414	985430	986411	987357	988267	989143	989984	31	4 3
2 0	30	983380	984432	985447	986427	987372	988282	989157	989997	30	0 3
2 4	31	983398	984449	985464	986443	987388	988297	989171	990011	29	56 3
2 8	32	4.983416	4.984466	4.985480	4.986459	4.987403	4.988312	4.989186	4.990025	28	52 3
2 12	33	983434	984483	985497	986475	987418	988327	989200	990038	27	48 3
2 16	34	983452	984500	985513	986491	987434	988341	989214	990052	26	44 3
2 20	35	983469	984518	985530	986507	987449	988356	989228	990066	25	40 3
2 24	36	4.983487	4.984535	4.985547	4.986523	4.987465	4.988371	4.989243	4.990079	24	36 3
2 28	37	983505	984552	985563	986539	987480	988386	989257	990093	23	32 3
2 32	38	983523	984569	985580	986555	987495	988401	989271	990107	22	28 3
2 36	39	983540	984586	985596	986571	987511	988416	989285	990120	21	24 3
2 40	40	4.983558	4.984603	4.985613	4.986587	4.987526	4.988430	4.989300	4.990134	20	20 3
2 44	41	983576	984620	985629	986603	987542	988445	989314	990148	19	16 3
2 48	42	983594	984637	985646	986619	987557	988460	989328	990161	18	12 3
2 52	43	983611	984655	985662	986635	987572	988475	989342	990175	17	8 3
2 56	44	4.983629	4.984672	4.985679	4.986651	4.987588	4.988489	4.989356	4.990188	16	4 3
3 0	45	983647	984689	985695	986667	987603	988504	989370	990202	15	0 3
3 4	46	983664	984706	985712	986683	987618	988519	989384	990215	14	56 0
3 8	47	983682	984723	985728	986699	987634	988533	989399	990229	13	52 0
3 12	48	4.983700	4.984740	4.985745	4.986714	4.987649	4.988548	4.989413	4.990243	12	48 0
3 16	49	983717	984757	985761	986730	987664	988563	989427	990256	11	44 0
3 20	50	983735	984774	985778	986746	987679	988578	989441	990270	10	40 0
3 24	51	983752	984791	985794	986762	987695	988592	989455	990283	9	36 0
3 28	52	4.983770	4.984808	4.985811	4.986778	4.987710	4.988607	4.989469	4.990297	8	32 0
3 32	53	983788	984825	985827	986794	987725	988622	989483	990310	7	28 0
3 36	54	983805	984842	985843	986809	987740	988636	989497	990324	6	24 0
3 40	55	983823	984859	985860	986825	987756	988651	989511	990337	5	20 0
3 44	56	4.983840	4.984876	4.985876	4.986841	4.987771	4.988665	4.989535	4.990351	4	16 0
3 48	57	983858	984893	985892	986857	987786	988680	989539	990364	3	12 0
3 52	58	983875	984910	985909	986873	987801	988695	989553	990377	2	8 0
3 56	59	983893	984927	985925	986888	987816	988709	989567	990391	1	4 0
4 0	60	4.983910	4.984944	4.985942	4.986904	4.987831	4.988724	4.989581	4.990404	0	0 0
m s	Arc.	211°	210°	209°	208°	207°	206°	205°	204°	Arc.	Time
		4 ^m	0 ^m 14 ^b	56 ^m	52 ^m	48 ^m	44 ^m	40 ^m	36 ^m		

14 Hours.

18 Hours.

10 Hours.

 $\frac{1}{2}$ Log. Haversines. (6)

10 Hours.

Time m s	Arc.	24"	28"	32"	36"	40"	44"	48"	52"	Arc.	Time m s
		156°	157°	158°	159°	160°	161°	162°	163°		
0 0	0	4.990404	4.991193	4.991947	4.992666	4.993351	4.994003	4.994620	4.995203	60	0 4
0 4	1	990418	991206	991959	992678	993363	994013	994630	995213	59	56 3
0 8	2	990431	991218	991971	992689	993374	994024	994640	995222	58	52 3
0 12	3	990445	991231	991983	992701	993385	994034	994650	995231	57	48 3
0 16	4	990458	991244	991996	992713	993396	994045	994660	995241	56	44 3
0 20	5	990471	991257	992008	992724	993407	994055	994670	995250	55	40 3
0 24	6	990485	991270	992020	992736	993418	994066	994680	995260	54	36 3
0 28	7	990498	991282	992032	992748	993429	994076	994690	995269	53	32 3
0 32	8	990511	991295	992044	992759	993440	994087	994700	995278	52	28 3
0 36	9	990525	991308	992057	992771	993451	994097	994710	995288	51	24 3
0 40	10	990538	991321	992069	992783	993462	994108	994719	995297	50	20 3
0 44	11	990551	991333	992081	992794	993473	994118	994729	995306	49	16 3
0 48	12	990565	991346	992093	992806	993484	994129	994739	995316	48	12 3
0 52	13	990578	991359	992105	992817	993495	994139	994749	995325	47	8 3
0 56	14	990591	991372	992117	992829	993506	994150	994759	995334	46	4 3
1 0	15	990605	991384	992130	992841	993517	994160	994769	995344	45	0 3
1 4	16	990618	991397	992142	992852	993528	994171	994779	995353	44	56 2
1 8	17	990631	991410	992154	992864	993539	994181	994789	995362	43	52 2
1 12	18	990644	991422	992166	992875	993550	994191	994798	995372	42	48 2
1 16	19	990658	991435	992178	992887	993561	994202	994808	995381	41	44 2
1 20	20	4.990671	4.991448	4.992190	4.992898	4.993572	4.994212	4.994818	4.995390	40	40 2
1 24	21	990684	991460	992202	992910	993583	994223	994828	995399	39	36 2
1 28	22	990697	991473	992214	992921	993594	994233	994838	995409	38	32 2
1 32	23	990711	991486	992226	992933	993605	994243	994847	995418	37	28 2
1 36	24	4.990724	4.991498	4.992238	4.992944	4.993616	4.994254	4.994857	4.995427	36	24 2
1 40	25	990737	991511	992251	992956	993627	994264	994867	995436	35	20 2
1 44	26	990750	991524	992263	992967	993638	994274	994877	995445	34	16 2
1 48	27	990763	991536	992275	992979	993649	994285	994887	995455	33	12 2
1 52	28	4.990777	4.991549	4.992287	4.992990	4.993660	4.994295	4.994896	4.995464	32	8 2
1 56	29	990790	991561	992299	993002	993670	994305	994906	995473	31	4 2
2 0	30	990803	991574	992311	993013	993681	994316	994916	995482	30	0 2
2 4	31	990816	991586	992323	993024	993692	994326	994925	995491	29	56 1
2 8	32	4.990829	4.991599	4.992335	4.993036	4.993703	4.994336	4.994935	4.995500	28	52 1
2 12	33	990842	991612	992347	993047	993714	994346	994945	995510	27	48 1
2 16	34	990855	991624	992358	993059	993725	994357	994955	995519	26	44 1
2 20	35	990868	991637	992370	993070	993735	994367	994964	995528	25	40 1
2 24	36	4.990881	4.991649	4.992382	4.993081	4.993746	4.994377	4.994974	4.995537	24	36 1
2 28	37	990895	991662	992394	993093	993757	994387	994984	995546	23	32 1
2 32	38	990908	991674	992406	993104	993768	994397	994993	995555	22	28 1
2 36	39	990921	991687	992418	993115	993779	994408	995003	995564	21	24 1
2 40	40	4.990934	4.991699	4.992430	4.993127	4.993789	4.994418	4.995013	4.995573	20	20 1
2 44	41	990947	991712	992442	993138	993800	994428	995022	995582	19	16 1
2 48	42	990960	991724	992454	993149	993811	994438	995032	995591	18	12 1
2 52	43	990973	991736	992466	993161	993822	994448	995041	995600	17	8 1
2 56	44	4.990986	4.991749	4.992478	4.993172	4.993832	4.994459	4.995051	4.995609	16	4 1
3 0	45	990999	991761	992489	993183	993843	994469	995061	995619	15	0 1
3 4	46	991012	991774	992501	993195	993854	994479	995070	995628	14	56 0
3 8	47	991025	991786	992513	993206	993864	994489	995080	995637	13	52 0
3 12	48	4.991038	4.991799	4.992525	4.993217	4.993875	4.994499	4.995089	4.995646	12	48 0
3 16	49	991051	991811	992537	993228	993886	994509	995099	995655	11	44 0
3 20	50	991064	991823	992549	993240	993896	994519	995108	995663	10	40 0
3 24	51	991077	991836	992560	993251	993907	994529	995118	995672	9	36 0
3 28	52	4.991090	4.991848	4.992572	4.993262	4.993918	4.994540	4.995127	4.995681	8	32 0
3 32	53	991102	991860	992584	993273	993928	994550	995137	995690	7	28 0
3 36	54	991115	991873	992596	993284	993939	994560	995146	995699	6	24 0
3 40	55	991128	991885	992607	993296	993950	994570	995156	995708	5	20 0
3 44	56	4.991141	4.991897	4.992619	4.993307	4.993960	4.994580	4.995165	4.995717	4	16 0
3 48	57	991154	991910	992631	993318	993971	994590	995175	995726	3	12 0
3 52	58	991167	991922	992643	993329	993981	994600	995184	995735	2	8 0
3 56	59	991180	991934	992654	993340	993992	994610	995194	995744	1	4 0
4 0	60	4.991193	4.991947	4.992666	4.993351	4.994003	4.994620	4.995203	4.995753	0	0 0
Time m s	Arc.	203°	202°	201°	200°	199°	198°	197°	196°	Arc.	Time m s
		32"	28"	24"	20"	16"	12"	8"	4"		

18 Hours.

261

18 Hours.

10 Нома.

Log. Invervnt. (6)

11 Нома.

Time m s	Arc.	10° 56'	11° 0'	4"	8"	12"	16"	20"	24"	Arc.	Time m s
		164°	165°	166°	167°	168°	169°	170°	171°		
0 0	0	4.995753	4.996269	4.996751	4.997199	4.997614	4.997996	4.998344	4.998659	60	0 4
0 4	1	995762	996277	996758	997206	997621	998002	998350	998664	59	56 3
0 8	2	995770	996285	996766	997214	997628	998008	998355	998669	58	52 3
0 12	3	995779	996293	996774	997222	997634	998014	998361	998674	57	48 3
0 16	4	4.995788	4.996302	4.996782	4.997228	4.997641	4.998020	4.998366	4.998679	56	44 3
0 20	5	995797	996310	996789	997235	997647	998026	998372	998684	55	40 3
0 24	6	995806	996318	996797	997242	997654	998032	998377	998689	54	36 3
0 28	7	995815	996326	996805	997249	997661	998038	998383	998694	53	32 3
0 32	8	4.995823	4.996335	4.996813	4.997257	4.997667	4.998044	4.998388	4.998699	52	28 3
0 36	9	995832	996343	996820	997264	997674	998050	998394	998703	51	24 3
0 40	10	995841	996351	996828	997271	997680	998056	998399	998708	50	20 3
0 44	11	995850	996359	996835	997278	997687	998062	998404	998713	49	16 1
0 48	12	4.995859	4.996368	4.996843	4.997285	4.997693	4.998068	4.998410	4.998718	48	12 3
0 52	13	995867	996376	996851	997292	997700	998074	998415	998723	47	8 3
0 56	14	995876	996384	996858	997299	997706	998080	998421	998728	46	4 3
1 0	15	995885	996392	996866	997306	997713	998086	998426	998733	45	0 3
1 4	16	4.995894	4.996400	4.996874	4.997313	4.997719	4.998092	4.998431	4.998737	44	56 2
1 8	17	995903	996409	996881	997320	997726	998098	998437	998742	43	52 2
1 12	18	995911	996417	996889	997327	997732	998104	998442	998747	42	48 2
1 16	19	995920	996425	996896	997334	997739	998110	998448	998752	41	44 2
1 20	20	4.995928	4.996433	4.996904	4.997341	4.997745	4.998116	4.998453	4.998757	40	40 2
1 24	21	995937	996441	996911	997348	997752	998122	998458	998761	39	36 2
1 28	22	995946	996449	996919	997355	997758	998127	998464	998766	38	32 2
1 32	23	995954	996457	996927	997362	997765	998133	998469	998771	37	28 2
1 36	24	4.995963	4.996465	4.996934	4.997369	4.997771	4.998139	4.998474	4.998776	36	24 2
1 40	25	995972	996473	996942	997376	997777	998145	998479	998780	35	20 2
1 44	26	995980	996482	996949	997383	997784	998151	998485	998785	34	16 2
1 48	27	995989	996490	996957	997390	997790	998157	998490	998790	33	12 2
1 52	28	4.995998	4.996498	4.996964	4.997397	4.997797	4.998163	4.998495	4.998795	32	8 2
1 56	29	996006	996506	996973	997404	997803	998168	998501	998799	31	4 2
2 0	30	996015	996514	996979	997411	997809	998174	998506	998804	30	0 2
2 4	31	996023	996522	996987	997418	997816	998180	998511	998809	29	56 1
2 8	32	4.996032	4.996530	4.996994	4.997425	4.997822	4.998186	4.998516	4.998813	28	52 1
2 12	33	996041	996538	997002	997432	997828	998192	998522	998818	27	48 1
2 16	34	996049	996546	997009	997439	997835	998197	998527	998823	26	44 1
2 20	35	996058	996554	997016	997445	997841	998203	998531	998827	25	40 1
2 24	36	4.996066	4.996562	4.997024	4.997452	4.997847	4.998209	4.998537	4.998832	24	36 1
2 28	37	996075	996570	997031	997459	997854	998215	998542	998837	23	32 1
2 32	38	996083	996578	997039	997466	997860	998220	998547	998841	22	28 1
2 36	39	996092	996586	997046	997473	997866	998226	998553	998846	21	24 1
2 40	40	4.996100	4.996594	4.997053	4.997480	4.997872	4.998232	4.998558	4.998851	20	20 1
2 44	41	996109	996602	997061	997486	997879	998238	998563	998855	19	16 1
2 48	42	996117	996610	997068	997493	997885	998243	998568	998860	18	12 1
2 52	43	996126	996617	997076	997500	997891	998249	998573	998864	17	8 1
2 56	44	4.996134	4.996625	4.997083	4.997507	4.997897	4.998255	4.998578	4.998869	16	4 1
3 0	45	996143	996633	997090	997514	997904	998260	998583	998873	15	0 1
3 4	46	996151	996641	997098	997520	997910	998266	998589	998878	14	56 0
3 8	47	996160	996649	997105	997527	997916	998272	998594	998883	13	52 0
3 12	48	4.996168	4.996657	4.997112	4.997534	4.997922	4.998277	4.998599	4.998887	12	48 0
3 16	49	996176	996665	997120	997541	997928	998283	998604	998892	11	44 0
3 20	50	996185	996673	997127	997547	997935	998288	998609	998896	10	40 0
3 24	51	996193	996680	997134	997554	997941	998294	998614	998901	9	36 0
3 28	52	4.996202	4.996688	4.997141	4.997561	4.997947	4.998300	4.998619	4.998905	8	32 0
3 32	53	996210	996696	997149	997568	997953	998305	998624	998910	7	28 0
3 36	54	996218	996704	997156	997574	997959	998311	998629	998914	6	24 0
3 40	55	996227	996712	997163	997581	997965	998316	998634	998919	5	20 0
3 44	56	4.996235	4.996720	4.997170	4.997588	4.997972	4.998322	4.998639	4.998923	4	16 0
3 48	57	996244	996728	997178	997594	997978	998328	998644	998927	3	12 0
3 52	58	996252	996735	997185	997601	997984	998333	998649	998931	2	8 0
3 56	59	996260	996743	997192	997608	997990	998339	998654	998936	1	4 0
4 0	60	4.996269	4.996751	4.997199	4.997614	4.997996	4.998344	4.998659	4.998941	0	0 0
Time m s	Arc.	195°	194°	193°	192°	191°	190°	189°	188°	Arc.	Time m s
		0° 13'	56° 12'	52°	48°	44°	40°	38°	32°		

13 Нома.

12 Нома.

11 Hours.

Log. Haversines. (1)

11 Hours.

Time m s	Arc.	28"	32"	36"	40"	44"	48"	52"	56"	Arc.	Time m s
		172°	173°	174°	175°	176°	177°	178°	179°		
0 0	0	4.998941	4.999189	4.999404	4.999586	4.999735	4.999851	4.999934	4.999983	60	0 4
0 4	1	998945	999193	999408	999589	999738	999853	999935	999984	59	56 3
0 8	2	998950	999197	999411	999592	999740	999854	999936	999984	58	52 3
0 12	3	998954	999201	999414	999595	999742	999856	999937	999985	57	48 3
0 16	4	998958	999205	999418	999597	999744	999858	999938	999986	56	44 3
0 20	5	998963	999208	999421	999600	999746	999859	999939	999986	55	40 3
0 24	6	998967	999212	999424	999603	999748	999861	999940	999987	54	36 3
0 28	7	998971	999216	999427	999605	999751	999862	999941	999987	53	32 3
0 32	8	998976	999220	999431	999608	999753	999864	999942	999988	52	28 3
0 36	9	998980	999224	999434	999611	999755	999866	999943	999988	51	24 3
0 40	10	998984	999227	999437	999614	999757	999867	999944	999988	50	20 3
0 44	11	998989	999231	999440	999616	999759	999869	999945	999989	49	16 3
0 48	12	998993	999235	999443	999619	999761	999870	999946	999989	48	12 3
0 52	13	998997	999239	999447	999621	999763	999872	999947	999990	47	8 3
0 56	14	999002	999242	999450	999624	999765	999873	999948	999990	46	4 3
1 0	15	999006	999246	999453	999627	999767	999875	999949	999991	45	0 3
1 4	16	999010	999250	999456	999629	999769	999876	999950	999991	44	56 2
1 8	17	999014	999253	999459	999632	999771	999878	999951	999991	43	52 2
1 12	18	999019	999257	999462	999635	999774	999879	999952	999992	42	48 2
1 16	19	999023	999261	999466	999637	999776	999881	999953	999992	41	44 2
1 20	20	999027	999265	999469	999640	999778	999882	999954	999993	40	40 2
1 24	21	999031	999268	999472	999642	999780	999884	999955	999993	39	36 2
1 28	22	999036	999272	999475	999645	999782	999885	999956	999993	38	32 2
1 32	23	999040	999276	999478	999647	999784	999887	999957	999994	37	28 2
1 36	24	999044	999279	999481	999650	999786	999888	999958	999994	36	24 2
1 40	25	999048	999283	999484	999652	999788	999890	999958	999994	35	20 2
1 44	26	999052	999286	999487	999655	999790	999891	999959	999995	34	16 2
1 48	27	999057	999290	999490	999658	999792	999892	999960	999995	33	12 2
1 52	28	999061	999294	999493	999660	999793	999894	999961	999995	32	8 2
1 56	29	999065	999297	999496	999663	999795	999895	999962	999996	31	4 2
2 0	30	999069	999301	999500	999666	999797	999897	999963	999996	30	0 2
2 4	31	999073	999304	999503	999667	999799	999898	999964	999996	29	56 1
2 8	32	999077	999308	999506	999670	999801	999899	999964	999996	28	52 1
2 12	33	999081	999312	999509	999672	999803	999901	999965	999996	27	48 1
2 16	34	999086	999315	999512	999675	999805	999902	999966	999996	26	44 1
2 20	35	999090	999319	999515	999677	999807	999903	999967	999996	25	40 1
2 24	36	999094	999322	999518	999680	999809	999905	999968	999997	24	36 1
2 28	37	999098	999326	999521	999682	999811	999906	999968	999997	23	32 1
2 32	38	999102	999329	999524	999685	999812	999907	999969	999997	22	28 1
2 36	39	999106	999333	999526	999687	999814	999908	999970	999998	21	24 1
2 40	40	999110	999336	999530	999689	999816	999910	999971	999998	20	20 1
2 44	41	999114	999340	999532	999692	999818	999911	999971	999998	19	16 1
2 48	42	999118	999343	999535	999694	999820	999912	999972	999998	18	12 1
2 52	43	999122	999347	999538	999696	999822	999914	999973	999999	17	8 1
2 56	44	999126	999350	999541	999699	999823	999915	999973	999999	16	4 1
3 0	45	999130	999354	999544	999701	999825	999916	999974	999999	15	0 1
3 4	46	999134	999357	999547	999704	999827	999917	999975	999999	14	56 0
3 8	47	999138	999361	999550	999706	999829	999919	999975	999999	13	52 0
3 12	48	999142	999364	999553	999708	999831	999920	999976	999999	12	48 0
3 16	49	999146	999367	999556	999710	999832	999921	999977	5.000000	11	44 0
3 20	50	999150	999371	999558	999713	999834	999922	999977	5.000000	10	40 0
3 24	51	999154	999374	999561	999715	999836	999924	999978	5.000000	9	36 0
3 28	52	999158	999378	999564	999717	999838	999925	999979	5.000000	8	32 0
3 32	53	999162	999381	999567	999720	999839	999926	999979	5.000000	7	28 0
3 36	54	999166	999384	999570	999722	999841	999927	999980	5.000000	6	24 0
3 40	55	999170	999388	999572	999724	999843	999928	999981	5.000000	5	20 0
3 44	56	999174	999391	999575	999726	999844	999929	999981	5.000000	4	16 0
3 48	57	999178	999394	999578	999729	999846	999930	999982	5.000000	3	12 0
3 52	58	999182	999398	999581	999731	999848	999932	999982	5.000000	2	8 0
3 56	59	999185	999401	999584	999733	999849	999933	999983	5.000000	1	4 0
4 0	60	999189	999404	999586	999735	999851	999934	999983	5.000000	0	0 0
Time	Arc.	187°	186°	185°	184°	183°	182°	181°	180°	Arc.	Time
		28"	24"	20"	16"	12"	8"	4"	0" 12"		

12 Hours.

282

12 Hours.

LOG. HAVERSINES.

		0m	1m	2m	3m	4m	5m	6m	7m	8m	9m				
		0 deg.				1 deg.				2 deg.					
Lat.	Long.	0'	15'	30'	45'	0'	15'	30'	45'	0'	15'	Lat.	Long.		
0	0	0.000000	4.677574	5.279632	5.631811	5.881684	6.075498	6.233852	6.367737	6.483711	6.586004	0	0		
1	15	1.121274	691931	286840	636623	885295	078388	236262	369802	485518	587611	1	15		
2	30	1.723332	706055	293989	641409	888892	081269	238664	371863	487322	589215	2	30		
3	45	2.075516	719952	301079	646168	892473	084140	241060	373919	489122	590815	3	45		
4	0	2.325392	4.733631	5.308113	5.650901	5.896041	6.087002	6.243450	6.375970	6.490918	6.592413	4	0		
5	15	519212	747098	315089	655609	899593	089854	245832	378016	492711	594008	5	15		
6	30	677575	760359	322010	660292	903131	092697	248209	380057	494500	595600	6	30		
7	45	811470	773421	328876	664949	906654	095531	250579	382093	496285	597190	7	45		
8	0	2.927452	4.786289	5.335689	5.669581	5.910164	6.098356	6.252942	6.384125	6.498066	6.598776	8	0		
9	15	3.029759	798969	342448	674189	913659	101171	255299	386152	499844	600359	9	15		
10	30	121272	811467	349156	678773	917140	103977	257650	388174	501618	601940	10	30		
11	45	204057	823788	355811	683332	920608	106774	259994	390191	503389	603517	11	45		
12	0	3.279635	4.835936	5.362417	5.687868	5.924061	6.109563	6.262332	6.392204	6.505156	6.605092	12	0		
13	15	349159	847917	368972	692380	927501	112342	264663	394212	506920	606664	13	15		
14	30	413528	859735	375478	696869	930927	115113	266989	396216	508679	608233	14	30		
15	45	473454	871393	381936	701334	934340	117874	269308	398215	510436	609799	15	45		
16	0	3.529512	4.882898	5.388347	5.705777	5.937740	6.120627	6.271621	6.400209	6.512189	6.611363	16	0		
17	15	582170	894252	394710	710197	941126	123371	273928	402198	513938	612923	17	15		
18	30	631817	905460	401027	714595	944499	126107	276229	404184	515683	614481	18	30		
19	45	678780	916525	407298	718971	947859	128834	278523	406164	517426	616036	19	45		
20	0	3.723332	4.927451	5.413525	5.723325	5.951206	6.131553	6.280812	6.408141	6.519164	6.617589	20	0		
21	15	765711	938241	419707	727657	954540	134263	283094	410112	520900	619138	21	15		
22	30	806118	948899	425845	731967	957862	136964	285371	412079	522631	620684	22	30		
23	45	844728	959427	431940	736256	961170	139657	287642	414042	524360	622228	23	45		
24	0	3.881695	4.969829	5.437993	5.740525	5.964467	6.142342	6.289906	6.416000	6.526085	6.623770	24	0		
25	15	917152	980108	444004	744772	967750	145019	292165	417954	527806	625308	25	15		
26	30	951219	990268	449974	748999	971022	147687	294418	419904	529524	626841	26	30		
27	45	984000	5.000309	455903	753205	974281	150347	296665	421849	531239	628377	27	45		
28	0	4.015588	5.010236	5.461791	5.757391	5.977528	6.152999	6.298907	6.423790	6.532950	6.629907	28	0		
29	15	046068	020050	467640	761556	980763	155643	301142	425726	534658	631435	29	15		
30	30	075515	029756	473450	765702	983986	158279	303372	427659	536363	632960	30	30		
31	45	103996	039353	479222	769829	987197	160907	305596	429586	538064	634482	31	45		
32	0	4.131572	5.048846	5.484955	5.773935	5.990396	6.163527	6.307815	6.431510	6.539762	6.636002	32	0		
33	15	158300	058236	490650	778023	993583	166139	310028	433429	541457	637519	33	15		
34	30	184230	067526	496309	782091	996759	168744	312235	435345	543148	639033	34	30		
35	45	209408	076717	501931	786140	999923	171340	314437	437255	544836	640545	35	45		
36	0	4.233877	5.085813	5.507517	5.790171	6.003076	6.173929	6.316633	6.439162	6.546521	6.642054	36	0		
37	15	257675	094814	513067	794183	006217	176510	318823	441065	548202	643560	37	15		
38	30	280839	103723	518582	798176	009347	179084	321008	442963	549880	645064	38	30		
39	45	303401	112540	524062	802151	012466	181650	323187	444857	551555	646565	39	45		
40	0	4.325392	5.121270	5.529507	5.806108	6.015573	6.184208	6.325362	6.446747	6.553227	6.648064	40	0		
41	15	346840	129913	534919	810047	018670	186759	327530	448633	554896	649560	41	15		
42	30	367771	138471	540297	813969	021755	189302	329693	450515	556561	651053	42	30		
43	45	388209	146944	545642	817872	024830	191838	331851	452393	558223	652544	43	45		
44	0	4.408177	5.155337	5.550955	5.821759	6.027894	6.194366	6.334004	6.454267	6.559882	6.654033	44	0		
45	15	427697	163648	556235	825628	030946	196888	336151	456137	561538	655518	45	15		
46	30	446788	171882	561483	829479	033989	199402	338293	458003	563191	657002	46	30		
47	45	465467	180037	566700	833314	037020	201908	340429	459864	564840	658482	47	45		
48	0	4.483754	5.188118	5.571885	5.837132	6.040041	6.204408	6.342561	6.461722	6.566487	6.659961	48	0		
49	15	501664	196123	577040	840933	043052	206900	344687	463576	568130	661436	49	15		
50	30	519212	204055	582165	844718	046052	209385	346808	465426	569770	662910	50	30		
51	45	536412	211916	587259	848486	049042	211863	348923	467272	571407	664380	51	45		
52	0	4.553278	5.219706	5.592323	5.852238	6.052022	6.214334	6.351034	6.469114	6.573041	6.665849	52	0		
53	15	569823	227427	597359	855974	054991	216798	353140	470952	574672	667314	53	15		
54	30	586059	235079	602365	859693	057950	219255	355240	472786	576300	668778	54	30		
55	45	601997	242665	607342	863397	060900	221705	357335	474616	577925	670238	55	45		
56	0	4.617648	5.250186	5.612292	5.867086	6.063839	6.224148	6.359426	6.476443	6.579547	6.671697	56	0		
57	15	633021	257641	617213	870758	066768	226584	361511	478265	581166	673153	57	15		
58	30	648128	265034	622106	874415	069688	229014	363591	480084	582781	674606	58	30		
59	45	662975	272363	626972	878057	072597	231436	365667	481899	584394	676057	59	45		
60	0	4.677574	5.279632	5.631811	5.881684	6.075498	6.233852	6.367737	6.483711	6.586004	6.677506	60	0		
		59m	58m	57m	56m	55m	54m	53m	52m	51m	50m				

	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"
	2 deg.			3 deg.			4 deg.			
0	6.677506	6.760277	6.835838	6.905345	6.969596	7.029602	7.085638	7.138273	7.187897	7.234833
1	674952	761592	837043	906458	970729	030566	086542	139124	186700	235594
2	680396	767904	838247	907369	971761	031530	087445	139974	189503	236355
3	681837	764215	839449	905672	972791	032497	088337	140823	190305	237115
4	683276	765524	840649	906978	973821	7.033453	7.089244	7.141671	7.191106	7.237874
5	684713	766831	841848	910894	974849	034113	090149	142519	191908	238632
6	686147	768136	843045	911999	975876	035372	091048	143365	192706	239394
7	687579	769439	844240	913103	976902	036329	091946	144211	193505	240147
8	689009	770740	845434	914206	977926	7.037286	7.092841	7.145056	7.194303	7.240904
9	690436	772039	846626	915307	978950	038242	093740	145900	195101	241660
10	691861	773336	847816	916407	979972	039197	094636	146744	195898	242415
11	693283	774631	849005	917505	980993	040150	095530	147586	196694	243169
12	694703	775924	850192	918603	982013	7.041103	7.096424	7.148428	7.197489	7.243923
13	696121	777216	851377	919698	983031	042054	097317	149269	198284	244676
14	697537	778505	852561	920793	984048	043005	098209	150109	199078	245429
15	698950	779793	853743	921886	985064	043954	099100	150948	199971	246181
16	6.700361	6.781078	6.851924	6.922977	6.986090	7.044903	7.099990	7.151786	7.200663	7.246932
17	701770	782362	856103	924067	987093	045850	100879	152624	201455	247683
18	703176	783644	857281	925156	988106	046796	101767	153461	202246	248434
19	704590	784924	858457	926244	989117	047742	102654	154297	203036	249184
20	6.705982	6.786202	6.856931	6.927330	6.990128	7.048646	7.103541	7.155132	7.203826	7.249931
21	707342	787478	860804	928414	991137	049629	104426	155966	204615	250679
22	708779	788752	861975	929499	992143	050571	105311	156800	205403	251426
23	710174	790024	863144	930580	993151	051513	106194	157633	206190	252173
24	6.711567	6.791295	6.861312	6.931661	6.994157	7.052453	7.107077	7.158465	7.206977	7.252919
25	712957	792564	863478	932740	995161	053392	107959	159296	207763	253664
26	714346	793830	864643	933818	996165	054330	108840	160126	208548	254409
27	715732	795095	865807	934895	997167	055267	109720	160956	209333	255153
28	6.717116	6.796359	6.866968	6.936970	6.998168	7.056203	7.110599	7.161785	7.210117	7.255897
29	718498	797620	867128	937044	999167	057136	111478	162618	210900	256640
30	719877	798879	868287	938117	1000166	058073	112355	163440	211682	257382
31	721255	800137	869444	939188	1001163	059006	113232	164266	212464	258124
32	6.722630	6.801393	6.873600	6.940258	7.002160	7.059938	7.114107	7.165092	7.213245	7.258865
33	724003	802647	874754	941327	1003145	060869	114982	165917	214025	259605
34	725374	803899	875906	942394	1004149	061799	115856	166741	214805	260342
35	726743	805149	877057	943460	1005142	062726	116729	167564	215584	261084
36	6.728109	6.806398	6.878206	6.944525	7.006134	7.063656	7.117601	7.168387	7.216362	7.261822
37	729473	807645	879354	945589	1007124	064583	118472	169208	217140	262560
38	730836	808890	880501	946651	1008114	065510	119343	170029	217917	263297
39	732196	810133	881645	947712	1009102	066435	120212	170849	218694	264034
40	6.733554	6.811375	6.882789	6.948771	7.010089	7.067359	7.121081	7.171669	7.219468	7.264770
41	734910	812614	883931	949829	101075	068282	121949	172488	220243	265505
42	736263	813852	885071	950887	1012061	069204	122816	173305	221017	266240
43	737615	815088	886210	951942	1013044	070125	123681	174122	221790	266977
44	6.738965	6.816323	6.887347	6.952997	7.014027	7.071046	7.124547	7.174939	7.222563	7.267707
45	740312	817555	888483	954050	1015009	071965	125411	175754	223335	268440
46	741657	818786	889617	955102	1015949	072883	126275	176569	224106	269172
47	743001	820015	890750	956152	1016969	073800	127137	177383	224877	269904
48	6.744322	6.821243	6.891882	6.957202	7.017947	7.074717	7.127999	7.178196	7.225647	7.270635
49	745661	822468	893012	958250	101824	075632	128860	179009	226416	271365
50	747016	823692	894140	959297	1019001	076547	129720	179821	227155	272095
51	748353	824915	895267	960342	1020076	077460	130579	180632	227933	272824
52	6.749686	6.826135	6.896393	6.961386	7.021850	7.079373	7.131437	7.181442	7.228720	7.273553
53	751017	827351	897517	962429	1022423	079284	132295	181860	229486	274281
54	752346	828571	898640	963471	1023794	080195	133151	183060	230252	275008
55	753673	829781	899761	964512	1024765	081104	134007	183868	231017	275735
56	6.754998	6.831000	6.900980	6.965551	7.025735	7.082013	7.134627	7.184675	7.231782	7.276461
57	756320	832212	901999	966589	1026703	082921	135716	185482	232546	277186
58	757641	833422	903116	967626	1027671	083826	136569	186287	233309	277911
59	758960	834631	904231	968661	1028637	084733	137422	187092	234071	278635
60	760277	835838	905345	969696	1029602	085638	138273	187897	234833	279359
	49"	48"	47"	46"	45"	44"	43"	42"	41"	40"

0 Норм.

Log. Haversines. (f)

0 Норм.

	20"	21"	22"	23"	24"	25"	26"	27"	28"	29"
	5 deg.				6 deg.				7 deg.	
0	0.7279359	7.321709	7.362087	7.400666	7.437600	7.473024	7.507056	7.539800	7.571331	7.601791
1	13 240082	32239	362744	401294	438203	473602	507612	540333	571867	602290
2	30 280805	323086	363401	401923	438805	474180	508167	540870	572383	602788
3	45 281526	323771	364057	402550	439406	474754	508723	541405	572898	603285
4	0 7.282248	7.324161	7.364713	7.403178	7.440008	7.475335	7.509278	7.541939	7.573414	7.603783
5	15 282968	325147	365368	403805	440608	475912	509832	542474	573929	604280
6	30 283684	325833	366023	404431	441209	476484	510386	543007	574443	604777
7	45 284408	326518	366677	405057	441809	477064	510940	543541	574958	605274
8	0 7.285127	7.327203	7.367331	7.405827	7.442408	7.477640	7.511494	7.544074	7.575472	7.605772
9	15 285841	327887	367984	406307	443007	478215	512047	544606	575929	606266
10	30 286563	328571	368637	406932	443606	478790	512600	545139	576499	606762
11	45 287280	329254	369289	407556	444204	479364	513152	545671	577012	607258
12	0 7.287996	7.329937	7.369941	7.408180	7.444802	7.479938	7.513704	7.546203	7.577525	7.607783
13	15 288712	330619	370592	408803	445399	480512	514246	546734	578037	608248
14	30 289428	331300	371243	409426	445996	481085	514807	547265	578550	608743
15	45 290142	331981	371894	410048	446593	481658	515359	547796	579062	609237
16	0 7.290856	7.332662	7.372544	7.410670	7.447189	7.482231	7.515909	7.548327	7.579573	7.609731
17	15 291570	333342	373193	411291	447785	482803	516460	548857	580085	610225
18	30 292283	334021	373842	411913	448380	483375	517010	549386	580596	610719
19	45 292995	334700	374490	412533	448975	483946	517559	549916	581106	611212
20	0 7.293707	7.335379	7.375138	7.413153	7.449570	7.484517	7.518109	7.550445	7.581617	7.611705
21	15 294418	336016	375786	413773	450164	485088	518858	550974	582127	612197
22	30 295129	336734	376433	414392	450758	485658	519206	551502	582637	612690
23	45 295839	337410	377079	415011	451351	486228	519754	552031	583146	613182
24	0 7.296548	7.338087	7.377725	7.415629	7.451944	7.486798	7.520302	7.552559	7.583656	7.613674
25	15 297257	338762	378371	416247	452537	487367	520850	553086	584164	614165
26	30 297965	339438	379016	416865	453129	487936	521397	553613	584673	614657
27	45 298673	340112	379660	417481	453721	488504	521944	554140	585181	615148
28	0 7.299380	7.340786	7.380304	7.418098	7.454312	7.489072	7.522491	7.554667	7.585696	7.615682
29	15 300087	341460	380948	418714	454903	489640	523037	555193	585697	616123
30	30 300793	342133	381591	419330	455493	490207	523583	555719	586205	616619
31	45 301498	342806	382234	419945	456083	490774	524128	556245	586712	617108
32	0 7.302203	7.343478	7.382876	7.420560	7.456673	7.491341	7.524673	7.556770	7.587719	7.617592
33	15 302907	344149	383517	421174	457262	491907	525218	557295	588225	618082
34	30 303611	344820	384159	421788	457851	492473	525763	557820	588732	618577
35	45 304314	345491	384799	422402	458440	493038	526307	558344	589237	619066
36	0 7.305017	7.346161	7.385440	7.423016	7.459028	7.493603	7.526850	7.558868	7.589743	7.619542
37	15 305719	346830	386079	423629	459616	494168	527394	559392	590248	620043
38	30 306420	347499	386719	424240	460203	494732	527937	559915	590754	620531
39	45 307121	348168	387358	424852	460790	495296	528480	560438	591258	621018
40	0 7.307921	7.348833	7.387996	7.425463	7.461376	7.495860	7.529022	7.560961	7.591763	7.621506
41	15 308521	349503	388634	426074	461962	496423	529554	561493	592267	621993
42	30 309220	350170	389271	426684	462548	496986	530106	562006	592771	622480
43	45 309919	350836	389908	427294	463134	497548	530647	562527	593274	622966
44	0 7.310617	7.351502	7.390545	7.427904	7.463719	7.498111	7.531189	7.563049	7.593778	7.623451
45	15 311314	352167	391181	428513	464303	498672	531729	563570	594281	623939
46	30 312011	352832	391816	429122	464887	499234	532270	564091	594784	624425
47	45 312708	353496	392452	429730	465471	499795	532810	564611	595286	624910
48	0 7.313403	7.354160	7.393086	7.430338	7.466054	7.500355	7.533349	7.565132	7.595788	7.625395
49	15 314098	354824	393720	430946	466637	500916	533889	565652	596290	625880
50	30 314793	355486	394354	431553	467220	501476	534428	566171	596792	626365
51	45 315487	356149	394987	432160	467802	502035	534967	566691	597293	626849
52	0 7.316181	7.356810	7.395620	7.432766	7.468384	7.502595	7.535505	7.567210	7.597794	7.627334
53	15 316874	357472	396252	433372	468965	503153	535043	567728	598294	627817
54	30 317566	358133	396884	433977	469546	503712	535581	568247	598795	628301
55	45 318258	358793	397516	434582	470127	504270	536118	568765	599295	628784
56	0 7.318950	7.359453	7.398147	7.435186	7.470707	7.504828	7.537655	7.569283	7.599795	7.629267
57	15 319640	360112	398777	435790	471287	505385	538192	569800	600294	629750
58	30 320331	360771	399407	436394	471866	505943	538728	570317	600794	630232
59	45 321020	361429	400037	436997	472445	506499	539264	570834	601292	630715
60	0 7.321709	7.362087	7.400666	7.437600	7.473024	7.507056	7.539800	7.571331	7.601791	7.631197

23 Норм.

23 Норм.

	30"	31"	32"	33"	34"	35"	36"	37"	38"	39"	
	7 deg.			8 deg.			9 deg.				
0	7.631197	7.659636	7.687169	7.713852	7.739736	7.764867	7.789287	7.813035	7.836147	7.858656	60
1	631679	660102	687620	714290	740161	765279	789688	813425	836522	859026	59
2	632160	660568	688072	714728	740586	765693	790089	813815	836907	859396	58
3	632641	661034	688523	715165	741010	766104	790490	814205	837286	859766	57
4	7.633122	7.661499	7.689974	7.715602	7.741434	7.766516	7.790890	7.814595	7.837666	7.860136	56
5	633603	661964	689424	716039	741858	766928	791291	814985	838045	860505	55
6	634083	662429	689875	716476	742282	767349	791691	815374	838424	860874	54
7	634564	662894	690325	716912	742706	767751	792091	815763	838803	861244	53
8	7.635043	7.663358	7.690775	7.717348	7.743129	7.768163	7.792491	7.816152	7.839182	7.861613	52
9	635523	663822	691224	717784	743552	768574	792891	816541	839561	861982	51
10	636002	664286	691674	718220	743975	768985	793290	816930	839939	862351	50
11	636481	664750	692123	718655	744398	769396	793690	817318	840318	862719	49
12	7.636960	7.665213	7.692572	7.719091	7.744821	7.769806	7.794089	7.817707	7.840666	7.863088	48
13	637439	665676	693021	719526	745243	770216	794486	818095	841074	863456	47
14	637917	666139	693469	719961	745666	770627	794887	818493	841452	863824	46
15	638395	666602	693917	720386	746087	771037	795285	818871	841829	864192	45
16	7.639873	7.667064	7.694365	7.720831	7.746509	7.771446	7.795684	7.819259	7.842207	7.864560	44
17	639350	667526	694813	721265	746931	771556	796082	819646	842584	864928	43
18	639827	667988	695261	721699	747352	772265	796480	820034	842961	865293	42
19	640304	668450	695708	722133	747773	772675	796878	820421	843338	865663	41
20	7.640781	7.668911	7.696155	7.722567	7.748194	7.773084	7.797275	7.820808	7.843715	7.866030	40
21	641257	669372	696590	723000	748615	773492	797673	821195	844092	866397	39
22	641734	669833	697049	723433	749036	773901	798070	821581	844468	866764	38
23	642209	670294	697495	723866	749456	774309	798467	821968	844845	867131	37
24	7.642685	7.670755	7.697941	7.724299	7.749876	7.774718	7.798864	7.822354	7.845221	7.867497	36
25	643160	671215	698387	724731	750296	775126	799261	822740	845597	867864	35
26	643636	671675	698833	725164	750716	775534	799658	823126	845973	868230	34
27	644110	672134	699278	725596	751135	775941	800054	823512	846349	868596	33
28	7.644585	7.672594	7.699724	7.726028	7.751555	7.776349	7.800450	7.823897	7.846724	7.868902	32
29	645059	673053	700169	726459	751974	776756	800846	824283	847099	869328	31
30	645533	673512	700614	726891	752393	777163	801242	824668	847475	869694	30
31	646007	673971	701058	727322	752811	777570	801638	825053	847850	870059	29
32	7.646481	7.674429	7.701502	7.727753	7.753230	7.777977	7.802034	7.825438	7.848225	7.870424	28
33	646954	674887	701947	728184	753648	778383	802429	825823	848599	870790	27
34	647427	675346	702390	728615	754066	778789	802824	826207	848974	871155	26
35	647900	675803	702834	729045	754484	779195	803219	826592	849348	871520	25
36	7.648372	7.676261	7.703278	7.729475	7.754902	7.779601	7.803614	7.826976	7.849723	7.871884	24
37	648845	676718	703721	729505	755319	780007	804008	827360	850097	872249	23
38	649318	677175	704164	730335	755737	780413	804403	827744	850470	872613	22
39	649788	677632	704606	730765	756154	780818	804797	828128	850844	872978	21
40	7.650260	7.678008	7.705049	7.731194	7.756571	7.781223	7.805191	7.828511	7.851218	7.873342	20
41	650731	678545	705491	731623	756987	781628	805545	828895	851591	873706	19
42	651202	679001	705933	732052	757404	782033	805979	829278	851964	874070	18
43	651673	679457	706375	732481	757820	782437	806372	829661	852338	874433	17
44	7.652143	7.679912	7.706917	7.732909	7.758236	7.782842	7.806766	7.830044	7.852711	7.874797	16
45	652613	680367	707258	733337	758652	783246	807159	830426	853083	875160	15
46	653083	680823	707699	733765	759068	783650	807552	830809	853456	875523	14
47	653553	681277	708140	734193	759483	784054	807944	831191	853823	875886	13
48	7.654022	7.681732	7.708581	7.734621	7.759899	7.784458	7.808337	7.831574	7.854201	7.876249	12
49	654492	682186	709021	735048	760314	784861	808729	831956	854573	876612	11
50	654961	682641	709462	735475	760729	785264	809122	832338	854945	876975	10
51	655429	683090	709902	735902	761143	785667	809514	832719	855317	877337	9
52	7.655898	7.683548	7.710342	7.736329	7.761558	7.786070	7.809906	7.833101	7.855688	7.877699	8
53	656366	684002	710781	736756	761972	786473	810297	833482	856060	878061	7
54	656834	684455	711221	737182	762386	786875	810689	833863	856431	878423	6
55	657301	684908	711660	737608	762800	787275	811080	834243	856802	878785	5
56	7.657769	7.685361	7.712099	7.738034	7.763214	7.787680	7.811472	7.834625	7.857173	7.879147	4
57	658236	685813	712537	738460	763627	788092	811863	835006	857544	879504	3
58	658703	686265	712976	738886	764041	788484	812254	835386	857915	879870	2
59	659169	686717	713414	739311	764454	788885	812644	835767	858285	880231	1
60	7.659636	7.687169	7.713852	7.739736	7.764867	7.789287	7.813035	7.836147	7.858656	7.880592	0
	28"	27"	26"	25"	24"	23"	22"	21"	20"		

0 Hours.

Log. Haversine. (f)

0 Hours.

	40"	41"	42"	43"	44"	45"	46"	47"	48"	49"
	10 deg.				11 deg.				12 deg.	
0° 0'	7.880592	7.901984	7.922858	7.943237	7.963146	7.982604	8.001632	8.020248	8.038469	8.056312
15	880953	902336	923201	943573	963474	982925	001945	020555	038770	056608
30	881314	902688	923545	943908	963801	983245	002259	020862	039070	056908
45	881674	903040	923888	944244	964129	983565	002572	021168	039370	057194
60	7.882035	7.903391	7.924231	7.944579	7.964457	7.983886	8.002866	8.021475	8.039670	8.057486
75	882395	903743	924574	944914	964784	984206	003199	021781	039970	057785
90	882755	904094	924917	945249	965111	984526	003512	022087	040270	058076
105	883115	904445	925260	945584	965439	984846	003825	022394	040570	058376
120	7.883475	7.904796	7.925601	7.945918	7.965766	7.985166	8.004137	8.022700	8.040870	8.058635
135	883835	905147	925945	946253	966093	985495	004450	023006	041169	058951
150	884194	905498	926298	946587	966420	985805	004763	023312	041469	059250
165	884554	905849	926630	946922	966746	986124	005075	023617	041768	059548
180	7.884913	7.906199	7.926972	7.947256	7.967073	7.986443	8.005388	8.023923	8.042067	8.059836
195	885272	906550	927314	947590	967399	986763	005700	024229	042367	060129
210	885631	906900	927656	947924	967726	987082	006012	024534	042666	060428
225	885990	907250	927998	948258	968052	987401	006324	024839	042965	060725
240	7.886349	7.907600	7.928339	7.948591	7.968378	7.987719	8.006636	8.025145	8.043264	8.061008
255	886707	907950	928681	948925	968704	988038	006947	025450	043562	061301
270	887066	908299	929022	949258	969030	988357	007259	025755	043861	061593
285	887424	908649	929363	949592	969355	988675	007571	026060	044160	061884
300	7.887782	7.908998	7.929705	7.949925	7.969681	7.988994	8.007882	8.026365	8.044458	8.062179
315	888140	909347	930045	950258	970006	989312	008194	026669	044756	062470
330	888497	909696	930386	950591	970332	989630	008506	026974	045055	062763
345	888855	910045	930727	950923	970657	989948	008816	027278	045353	063054
360	7.889213	7.910394	7.931067	7.951256	7.970982	7.990266	8.009127	8.027583	8.045651	8.063347
375	889570	910743	931408	951589	971307	990584	009438	027887	045949	063638
390	889927	911091	931748	951921	971632	990901	009748	028191	046247	063930
405	890284	911440	932086	952253	971956	991219	010059	028495	046544	064223
420	7.890641	7.911788	7.932428	7.952585	7.972281	7.991536	8.010370	8.028799	8.046842	8.064513
435	890998	912136	932768	952917	972606	991853	010680	029103	047139	064805
450	891354	912484	933108	953249	972930	992171	010990	029407	047437	065096
465	891711	912832	933447	953581	973254	992488	011300	029710	047734	065387
480	7.892067	7.913179	7.933787	7.953912	7.973578	7.992805	8.011611	8.030014	8.048031	8.065679
495	892423	913527	934126	954244	973902	993122	011920	030317	048329	065970
510	892779	913874	934465	954575	974226	993438	012230	030621	048626	066261
525	893135	914222	934804	954906	974550	993755	012540	030924	048922	066552
540	7.893491	7.914569	7.935143	7.955238	7.974873	7.994071	8.012850	8.031227	8.049219	8.066829
555	893846	914916	935482	955568	975197	994388	013159	031530	049516	067132
570	894202	915262	935821	955899	975520	994704	013469	031833	049813	067422
585	894557	915609	936159	956230	975844	995020	013778	032136	050109	067714
600	7.894912	7.915956	7.936497	7.956561	7.976167	7.995336	8.014087	8.032438	8.050405	8.068000
615	895267	916302	936836	956991	976490	995652	014396	032741	050702	068295
630	895622	916648	937174	957221	976813	995968	014705	033043	050998	068585
645	895977	916994	937512	957552	977135	996283	015014	033346	051294	068875
660	7.896331	7.917341	7.937850	7.957882	7.977458	7.996599	8.015323	8.033646	8.051590	8.069165
675	896685	917686	938187	958212	977780	996914	015632	033950	051886	069455
690	897040	918032	938525	958541	978103	997230	015940	034252	052182	069745
705	897394	918378	938862	958871	978425	997545	016248	034554	052477	070034
720	7.897748	7.918723	7.939200	7.959201	7.978747	7.997860	8.016557	8.034856	8.052773	8.070324
735	898102	919068	939537	959530	979069	998175	016865	035157	053068	070613
750	898455	919414	939874	959859	979391	998490	017173	035459	053364	070903
765	898809	919759	940211	960189	979713	998804	017481	035760	053659	071192
780	7.899162	7.920103	7.940548	7.960518	7.980035	7.999119	8.017789	8.036062	8.053954	8.071451
795	899515	920448	940884	960847	980356	999434	018097	036363	054249	071740
810	899868	920793	941221	961175	980678	999748	018404	036664	054544	072029
825	900221	921137	941557	961504	980999	8.000062	018712	036965	054839	072318
840	7.900574	7.921482	7.941894	7.961833	7.981320	8.000376	8.019019	8.037266	8.055134	8.072637
855	900927	921826	942230	962161	981642	000690	019327	037567	055428	072926
870	901279	922170	942566	962489	981962	001004	019634	037865	055723	073215
885	901632	922514	942902	962818	982283	001318	019941	038169	056018	073504
900	7.901984	7.922858	7.943237	7.963146	7.982604	8.001632	8.020248	8.038469	8.056312	8.073799
915	902336	923201	943573	963474	982925	001945	020555	038770	056608	073988
930	902688	923545	943908	963801	983245	002259	020862	039070	056908	074177
945	903040	923888	944244	964129	983565	002572	021168	039370	057194	074366
960	7.903391	7.924231	7.944579	7.964457	7.983886	8.002866	8.021475	8.039670	8.057486	8.074886
975	903743	924574	944914	964784	984206	003199	021781	039970	057785	074975
990	904094	924917	945249	965111	984526	003512	022087	040270	058076	075064
1005	904445	925260	945584	965439	984846	003825	022394	040570	058376	075153
1020	7.904796	7.925601	7.945918	7.965766	7.985166	8.004137	8.022700	8.040870	8.058635	8.075935
1035	905147	925945	946253	966093	985495	004450	023006	041169	058951	075924
1050	905498	926298	946587	966420	985805	004763	023312	041469	059250	076013
1065	905849	926630	946922	966746	986124	005075	023617	041768	059548	076102
1080	7.906199	7.926972	7.947256	7.967073	7.986443	8.005388	8.023923	8.042067	8.059836	8.076936
1095	906550	927314	947590	967399	986763	005700	024229	042367	060129	076925
1110	906900	927656	947924	967726	987082	006012	024534	042666	060428	077014
1125	907250	927998	948258	968052	987401	006324	024839	042965	060725	077103
1140	7.907600	7.928339	7.948591	7.968378	7.987719	8.006636	8.025145	8.043264	8.061008	8.077908
1155	907950	928681	948925	968704	988038	006947	025450	043562	061301	077997
1170	908299	929022	949258	969030	988357	007259	025755	043861	061593	078086
1185	908649	929363	949592	969355	988675	007571	026060	044160	061884	078175
1200	7.908998	7.929705	7.949925	7.969681	7.988994	8.007882	8.026365	8.044458	8.062179	8.078979
1215	909347	930045	950258	970006	989312	008194	026669	044756	062470	078968
1230	909696	930386	950591	970332	989630	008506	026974	045055	062763	079057
1245	910045	930727	950923	970657	989948	008816	027278	045353	063054	079146
1260	7.910394	7.931067	7.951256	7.970982	7.990266	8.009127	8.027583	8.045651	8.063347	8.079947
1275	910743	931408	951589	971307	990584	009438	027887	045949	063638	079936
1290	911091	931748	951921	971632	990901	009748	028191	046247	063930	080025
1305	911440	932086	952253	971956	991219	010059	028495	046544	064223	080114
1320	7.911788	7.932428	7.952585	7.972281	7.991536	8.010370	8.028799	8.046842	8.064513	8.080913
1335	912136	932768	952917	972606	991853	010680	029103	047139	064805	080902
1350	912484	933108	953249	972930	992171	010990	029407	047437	065096	080991
1365	912832	933447	953581	973254	992488	011300	029710	047734	065387	081080
1380	7.913179	7.933787	7.953912	7.973578	7.992805	8.011611	8.030014	8.048031	8.065679	8.082679

	50"	51"	52"	53"	54"	55"	56"	57"	58"	59"	
	12 deg.			13 deg.			14 deg.				
0	073722	090922	8.107718	8.124190	8.140352	8.156215	8.171789	8.187085	8.202112	8.216879	60
15	074080	091205	107995	124462	140619	156477	172046	187337	202360	217123	59
30	074368	091487	108272	124734	140886	156739	172303	187590	202608	217367	58
45	074656	091770	108549	125005	141152	157000	172560	187842	202856	217611	57
60	074944	092052	108826	125277	141419	157262	172817	188095	203104	217854	56
75	075232	092334	109102	125549	141685	157524	173074	188347	203352	218098	55
90	075520	092617	109379	125820	141952	157785	173331	188599	203600	218342	54
105	075808	092899	109656	126091	142218	158046	173588	188851	203848	218585	53
120	076095	093181	109932	126363	142484	158308	173844	189104	204095	218829	52
135	076383	093463	110209	126634	142750	158569	174101	189356	204343	219072	51
150	076670	093744	110485	126905	143016	158830	174357	189609	204591	219316	50
165	076958	094026	110761	127176	143282	159091	174614	189859	204838	219559	49
180	077245	094308	111037	127447	143548	159352	174870	190111	205086	219802	48
195	077532	094589	111314	127718	143814	159613	175126	190363	205333	220045	47
210	077819	094871	111590	127989	144080	159874	175382	190615	205580	220288	46
225	078106	095152	111865	128259	144345	160135	175639	190866	205827	220531	45
240	078393	095433	112141	128530	144611	160396	175895	191118	206075	220774	44
255	078680	095714	112417	128800	144876	160656	176151	191369	206322	221017	43
270	078967	095995	112693	129071	145142	160917	176406	191621	206569	221260	42
285	079253	096276	112968	129341	145407	161177	176662	191872	206816	221503	41
300	079540	096557	113244	129611	145672	161438	176918	192123	207062	221745	40
315	079826	096838	113519	129882	145937	161699	177174	192374	207309	221988	39
330	080113	097119	113794	130152	146203	161958	177429	192625	207556	222230	38
345	080399	097399	114069	130422	146468	162218	177685	192876	207803	222473	37
360	080685	097680	114345	130692	146733	162479	177940	193127	208049	222715	36
375	080971	097960	114620	130961	146997	162739	178195	193378	208296	222957	35
390	081257	098241	114895	131231	147262	162998	178451	193629	208542	223200	34
405	081543	098521	115169	131501	147527	163258	178706	193879	208788	223442	33
420	081828	098801	115444	131770	147791	163518	178961	194130	209035	223684	32
435	082114	099081	115719	132040	148056	163774	179216	194381	209281	223926	31
450	082400	099361	115993	132310	148320	164037	179471	194631	209527	224169	30
465	082685	099641	116268	132579	148585	164297	179726	194881	209773	224410	29
480	082970	099921	116542	132848	148849	164556	179981	195132	210019	224652	28
495	083256	100200	116817	133117	149113	164816	180235	195382	210265	224893	27
510	083541	100480	117091	133386	149377	165075	180490	195632	210511	225135	26
525	083826	100759	117365	133655	149641	165334	180745	195882	210757	225377	25
540	084111	101039	117639	133924	149905	165593	180999	196139	211003	225618	24
555	084396	101318	117913	134193	150169	165852	181254	196392	211248	225860	23
570	084681	101597	118187	134461	150433	166111	181508	196632	211494	226101	22
585	084965	101876	118461	134730	150696	166370	181762	196882	211739	226343	21
600	085250	102156	118734	134999	150960	166629	182016	197132	211985	226584	20
615	085534	102434	119008	135267	151223	166888	182270	197382	212230	226825	19
630	085819	102713	119282	135535	151487	167146	182525	197631	212475	227066	18
645	086103	102992	119555	135804	151750	167405	182778	197881	212721	227307	17
660	086387	103271	119828	136072	152013	167663	183032	198130	212966	227548	16
675	086671	103549	120102	136340	152277	167922	183286	198380	213211	227789	15
690	086956	103828	120375	136608	152540	168180	183540	198629	213456	228030	14
705	087239	104106	120648	136876	152803	168439	183794	198878	213701	228271	13
720	087523	104385	120921	137144	153066	168697	184047	199127	213946	228512	12
735	087807	104663	121194	137412	153328	168955	184301	199376	214191	228752	11
750	088091	104941	121467	137680	153591	169213	184554	199625	214435	228993	10
765	088374	105219	121739	137947	153854	169471	184808	199874	214680	229234	9
780	088658	105497	122012	138215	154117	169729	185061	200123	214925	229474	8
795	088941	105775	122285	138482	154379	169986	185314	200372	215169	229714	7
810	089224	106053	122557	138750	154642	170244	185567	200621	215414	229955	6
825	089508	106330	122829	139017	154904	170502	185820	200869	215658	230195	5
840	089791	106608	123102	139284	155166	170759	186073	201118	215902	230435	4
855	090073	106885	123374	139551	155429	171017	186326	201366	216147	230675	3
870	090357	107163	123646	139818	155691	171274	186579	201615	216391	230915	2
885	090639	107440	123918	140085	155953	171532	186832	201863	216635	231155	1
900	090922	107718	124190	140352	156215	171789	187085	202112	216879	231395	0
	0"	8"	7"	6"	5"	4"	3"	2"	1"	0"	

1 Hour.

Log. Haverance (1)

1 Hour.

	0"	1"	2"	3"	4"	5"	6"	7"	8"	9"
	15 deg.				16 deg.				17 deg.	
0	8.231395	8.245669	8.259709	8.273519	8.287111	8.300488	8.313659	8.326629	8.339404	8.351990
1	15	231635	245905	259940	273748	287335	300710	313877	326844	339615
2	30	231875	246141	260172	273976	287560	300931	314095	327058	339827
3	45	232115	246376	260404	274204	287784	301152	314312	327272	340038
4	0	8.232354	8.246612	8.260636	8.274432	8.288009	8.301373	8.314530	8.327487	8.340249
5	15	232594	246848	260867	274660	288233	301594	314747	327701	340460
6	30	232833	247083	261100	274888	288458	301815	314965	327915	340671
7	45	233073	247319	261331	275116	288682	302035	315182	328131	340882
8	0	8.233312	8.247554	8.261562	8.275344	8.288906	8.302256	8.315400	8.328348	8.341093
9	15	233552	247790	261794	275572	289131	302477	315617	328558	341304
10	30	233791	248025	262025	275800	289355	302698	315835	328772	341515
11	45	234030	248260	262257	276027	289579	302918	316052	328986	341726
12	0	8.234269	8.248493	8.262488	8.276255	8.289803	8.303139	8.316269	8.329200	8.341936
13	15	234508	248730	262719	276483	290027	303359	316486	329413	342147
14	30	234747	248965	262951	276710	290251	303580	316703	329627	342358
15	45	234986	249200	263182	276938	290475	303800	316920	329841	342568
16	0	8.235225	8.249435	8.263413	8.277165	8.290699	8.304021	8.317137	8.330055	8.342779
17	15	235464	249670	263644	277392	290922	304241	317354	330268	342989
18	30	235703	249905	263875	277620	291146	304461	317571	330482	343200
19	45	235941	250140	264106	277847	291370	304681	317788	330695	343410
20	0	8.236180	8.250374	8.264337	8.278074	8.291593	8.304901	8.318004	8.330909	8.343620
21	15	236418	250609	264567	278301	291817	305121	318221	331122	343830
22	30	236657	250843	264798	278528	292040	305341	318438	331336	344041
23	45	236895	251078	265029	278755	292264	305561	318654	331549	344251
24	0	8.237133	8.251312	8.265259	8.278982	8.292487	8.305781	8.318871	8.331762	8.344461
25	15	237372	251547	265490	279209	292710	306001	319087	331975	344671
26	30	237610	251781	265720	279436	292933	306221	319304	332189	344881
27	45	237848	252015	265951	279662	293157	306440	319520	332402	345091
28	0	8.238086	8.252249	8.266181	8.279889	8.293386	8.306660	8.319736	8.332615	8.345301
29	15	238324	252483	266411	280115	293603	306880	319953	332828	345511
30	30	238562	252717	266642	280342	293826	307100	320169	333041	345720
31	45	238800	252951	266873	280568	294049	307319	320385	333254	345930
32	0	8.239038	8.253185	8.267163	8.280795	8.294272	8.307538	8.320601	8.333466	8.346140
33	15	239275	253419	267392	281021	294494	307757	320817	333679	346349
34	30	239513	253653	267622	281248	294717	307977	321033	333892	346558
35	45	239751	253886	267851	281474	294940	308196	321249	334105	346768
36	0	8.239988	8.254120	8.268022	8.281700	8.295162	8.308415	8.321465	8.334317	8.346978
37	15	240226	254354	268251	281926	295385	308634	321681	334530	347187
38	30	240463	254587	268481	282152	295608	308853	321896	334742	347397
39	45	240700	254820	268711	282378	295830	309073	322112	334955	347606
40	0	8.240938	8.255054	8.268940	8.282604	8.296052	8.309291	8.322328	8.335167	8.347815
41	15	241175	255287	269170	282830	296275	309510	322543	335379	348025
42	30	241412	255520	269399	283056	296497	309729	322759	335592	348234
43	45	241649	255754	269629	283282	296719	309948	322974	335804	348443
44	0	8.241886	8.255987	8.269858	8.283507	8.296941	8.310167	8.323190	8.336016	8.348652
45	15	242123	256220	270087	283733	297164	310385	323405	336228	348861
46	30	242360	256453	270317	283959	297386	310604	323620	336440	349070
47	45	242597	256686	270546	284184	297608	310823	323836	336652	349279
48	0	8.242833	8.256919	8.270775	8.284410	8.297830	8.311041	8.324051	8.336864	8.349488
49	15	243070	257151	271004	284635	298051	311260	324266	337076	349696
50	30	243307	257384	271233	284860	298273	311478	324481	337288	349905
51	45	243543	257617	271462	285086	298495	311696	324696	337500	350114
52	0	8.243780	8.257849	8.271691	8.285311	8.298717	8.311915	8.324911	8.337712	8.350323
53	15	244016	258082	271919	285536	298934	312133	325126	337924	350531
54	30	244252	258314	272148	285761	299160	312351	325341	338135	350740
55	45	244489	258547	272377	285986	299382	312569	325556	338347	350948
56	0	8.244725	8.258779	8.272606	8.286211	8.299603	8.312787	8.325771	8.338558	8.351157
57	15	244961	259011	272834	286436	299824	313005	325985	338770	351365
58	30	245197	259244	273063	286661	300046	313223	326200	338981	351573
59	45	245433	259476	273291	286886	300267	313441	326414	339193	351782
60	0	8.245669	8.259708	8.273519	8.287111	8.300488	8.313659	8.326629	8.339404	8.351990
	59"	58"	57"	56"	55"	54"	53"	52"	51"	50"

22 Hours.

22 Hours.

1 Поча.

Log. Haversines. (1)

1 Поча.

	20"	21"	22"	23"	24"	25"	26"	27"	28"	29"
	20 deg.				21 deg.				22 deg.	
0 0	8.479340	8.490019	8.500561	8.510979	8.521266	8.531429	8.541470	8.551392	8.561198	8.570890
1 15	479519	490196	500739	511151	521436	531597	541631	551556	561360	571051
2 30	479699	490373	500914	511324	521607	531765	541802	551720	561523	571215
3 45	479878	490550	501088	511496	521777	531934	541968	551885	561685	571375
4 0	480017	490726	501263	511669	521947	532102	542135	552049	561847	571532
5 15	480235	490903	501437	511941	522118	532270	542301	552213	562010	571693
6 30	480414	491080	501612	512013	522289	532438	542467	552378	562172	571834
7 15	480593	491246	501780	512186	522458	532606	542633	552542	562334	572014
8 0	480772	491433	501961	512358	522628	532774	542799	552706	562497	572174
9 15	480951	491610	502135	512530	522798	532942	542965	552870	562659	572334
10 30	481130	491786	502309	512702	522968	533111	543131	553034	562821	572495
11 45	481308	491963	502483	512874	523138	533278	543297	553198	562983	572655
12 0	481487	492139	502658	513047	523304	533446	543463	553362	563145	572815
13 15	481666	492315	502832	513219	523478	533614	543629	553526	563307	572975
14 30	481844	492492	503006	513391	523648	533782	543795	553690	563469	573135
15 45	482023	492668	503180	513563	523818	533930	543961	553854	563631	573294
16 0	482201	492844	503354	513735	523988	534118	544127	554014	563793	573454
17 15	482380	493021	503528	513906	524158	534286	544293	554178	563955	573614
18 30	482558	493197	503702	514078	524328	534454	544459	554346	564117	573774
19 45	482737	493373	503876	514250	524497	534621	544624	554509	564279	573934
20 0	482915	493549	504050	514422	524667	534789	544790	554673	564441	574094
21 15	483093	493725	504224	514594	524837	534957	544956	554836	564603	574254
22 30	483272	493901	504398	514766	525007	535124	545121	555001	564765	574414
23 45	483450	494077	504572	514937	525176	535292	545287	555164	564926	574574
24 0	483628	494253	504746	515109	525346	535459	545453	555329	565088	574734
25 15	483805	494429	504920	515281	525515	535627	545618	555491	565250	574894
26 30	483983	494605	505093	515452	525685	535793	545784	555655	565412	575054
27 45	484163	494781	505267	515624	525854	535962	545949	555819	565573	575214
28 0	484341	494957	505441	515795	526024	536129	546115	555982	565735	575374
29 15	484519	495133	505614	515967	526193	536297	546283	556148	565896	575534
30 30	484697	495308	505788	516138	526363	536464	546445	556309	566058	575694
31 45	484875	495484	505961	516310	526532	536631	546611	556472	566219	575854
32 0	485053	495660	506135	516481	526701	536799	546776	556636	566381	576014
33 15	485231	495835	506309	516652	526871	536966	546941	556799	566542	576174
34 30	485409	496011	506482	516822	527040	537133	547107	556963	566704	576334
35 45	485586	496187	506655	516995	527209	537300	547272	557126	566865	576494
36 0	485764	496362	506829	517166	527378	537468	547437	557289	567027	576654
37 15	485942	496538	507002	517338	527547	537633	547602	557451	567189	576814
38 30	486119	496713	507175	517509	527717	537802	547767	557615	567349	576974
39 45	486297	496889	507349	517680	527886	537969	547932	557779	567510	577134
40 0	486475	497064	507522	517851	528055	538136	548097	557942	567672	577294
41 15	486652	497239	507695	518022	528224	538302	548262	558105	567833	577454
42 30	486830	497415	507868	518193	528393	538470	548427	558268	567994	577614
43 45	487007	497590	508041	518364	528562	538637	548592	558431	568155	577774
44 0	487185	497765	508214	518535	528731	538804	548757	558594	568316	577934
45 15	487362	497939	508387	518706	528900	538971	548922	558759	568477	578094
46 30	487540	498116	508560	518877	529068	539137	549087	558920	568639	578254
47 45	487717	498291	508733	519048	529237	539304	549252	559083	568800	578414
48 0	487894	498466	508906	519219	529406	539471	549417	559246	568961	578574
49 15	488072	498644	509079	519390	529575	539638	549581	559408	569121	578734
50 30	488249	498816	509252	519560	529743	539804	549746	559571	569282	578894
51 45	488426	498991	509425	519731	529912	539971	549911	559734	569443	579054
52 0	488603	499166	509597	519902	530081	540138	550076	559897	569604	579214
53 15	488780	499341	509771	520072	530249	540304	550240	560060	569765	579374
54 30	488956	500021	510634	520243	530418	540471	550405	560222	569926	579534
55 45	489135	500691	511016	520414	530586	540637	550569	560383	570087	579694
56 0	489312	500866	511029	520584	530755	540804	550734	560548	570247	579854
57 15	489491	501040	511061	520755	530923	540970	550898	560710	570408	579994
58 30	489666	501215	511063	520925	531092	541137	551064	560873	570569	580154
59 45	489842	501390	511066	521096	531260	541303	551227	561035	570729	580314
60 0	490019	501564	511097	521266	531429	541470	551392	561198	570890	580474

22 Поча.

23 Поча.

1 Hour.

Log. Haverman. (C)

1 Hour.

	30"	31"	32"	33"	34"	35"	36"	37"	38"	39"	
	22 deg.			23 deg.			24 deg.				
0	530171	589944	599311	609573	617734	626795	635758	644625	653399	662081	60
15	580630	590101	599466	609727	617885	626945	635906	644772	653545	662225	59
30	580789	590258	599621	609880	618037	627095	636055	644919	653690	662369	58
45	580948	590413	599776	609933	618189	627245	636203	645066	653836	662513	57
60	581106	590572	599931	610087	618341	627395	636352	645213	653991	662657	56
75	581263	590729	600036	609340	618492	627545	636500	645360	654126	662801	55
90	581424	590886	600242	609494	618644	627695	636649	645507	654272	662945	54
105	581582	591041	600396	609647	618796	627845	636797	645654	654417	663088	53
120	581741	591199	600552	609800	618947	627995	636946	645801	654562	663232	52
135	581899	591356	600707	609954	619099	628145	637094	645947	654707	663376	51
150	582058	591513	600862	610107	619251	628295	637242	646094	654853	663520	50
165	582216	591669	601016	610260	619402	628445	637391	646241	654998	663663	49
180	582375	591826	601171	610413	619554	628595	637539	646388	655143	663807	48
195	582533	591982	601326	610566	619705	628745	637687	646534	655288	663951	47
210	582691	592139	601481	610720	619857	628895	637835	646681	655433	664094	46
225	582850	592296	601636	610873	620008	629044	637984	646828	655578	664238	45
240	583008	592452	601791	611026	620160	629194	638132	646974	655723	664381	44
255	583166	592609	601945	611179	620311	629344	638280	647121	655868	664525	43
270	583325	592765	602100	611332	620462	629494	638428	647267	656014	664668	42
285	583483	592922	602255	611485	620614	629643	638576	647414	656158	664812	41
300	583641	593078	602410	611638	620765	629793	638724	647560	656304	664955	40
315	583799	593234	602564	611791	620916	629943	638872	647707	656448	665099	39
330	583957	593391	602719	611944	621067	630092	639020	647853	656593	665242	38
345	584115	593547	602873	612097	621219	630242	639168	648000	656738	665386	37
360	584273	593703	603028	612249	621370	630391	639316	648146	656883	665529	36
375	584431	593860	603182	612402	621521	630541	639464	648293	657028	665672	35
390	584589	594016	603337	612555	621672	630691	639612	648439	657173	665816	34
405	584747	594172	603491	612708	621823	630840	639760	648585	657317	665959	33
420	584905	594328	603646	612861	621974	630989	639908	648731	657462	666102	32
435	585063	594484	603800	613013	622125	631139	640056	648878	657607	666245	31
450	585221	594641	603955	613166	622276	631289	640203	649024	657752	666389	30
465	585379	594797	604109	613319	622427	631438	640351	649170	657896	666532	29
480	585537	594953	604263	613471	622578	631587	640499	649316	658041	666675	28
495	585695	595109	604418	613624	622729	631736	640647	649463	658186	666818	27
510	585853	595265	604572	613776	622880	631886	640794	649609	658330	666961	26
525	586010	595421	604726	613929	623031	632035	640942	649755	658475	667104	25
540	586168	595577	604880	614081	623182	632184	641090	649901	658620	667247	24
555	586326	595733	605034	614234	623333	632333	641237	650047	658764	667390	23
570	586483	595888	605189	614386	623484	632482	641385	650193	658909	667533	22
585	586641	596044	605343	614539	623634	632632	641532	650339	659053	667676	21
600	586799	596200	605497	614691	623785	632781	641680	650485	659198	667819	20
615	586956	596356	605651	614844	623936	632930	641828	650631	659342	667962	19
630	587114	596512	605805	614996	624087	633079	641975	650777	659486	668105	18
645	587271	596667	605959	615148	624237	633228	642123	650923	659631	668248	17
660	587429	596823	606113	615301	624388	633377	642270	651069	659775	668391	16
675	587586	596979	606267	615453	624539	633526	642417	651214	659919	668534	15
690	587743	597135	606421	615605	624689	633675	642565	651360	660064	668677	14
705	587901	597290	606575	615757	624840	633824	642712	651506	660208	668819	13
720	588058	597446	606729	615910	624990	633973	642859	651652	660352	668962	12
735	588215	597601	606883	616062	625141	634122	643007	651798	660497	669105	11
750	588373	597757	607036	616214	625291	634271	643154	651943	660641	669248	10
765	588530	597912	607190	616366	625442	634419	643301	652089	660785	669390	9
780	588687	598068	607344	616518	625592	634568	643449	652233	660929	669533	8
795	588844	598223	607499	616670	625742	634717	643596	652378	661073	669676	7
810	588999	598375	607651	616822	625893	634866	643743	652526	661217	669818	6
825	589159	598534	607805	616974	626043	635014	643890	652672	661361	669961	5
840	589316	598689	607959	617126	626194	635163	644037	652817	661505	670103	4
855	589473	598845	608112	617278	626344	635312	644184	652963	661649	670246	3
870	589630	599000	608266	617430	626494	635461	644331	653108	661793	670389	2
885	589787	599155	608419	617582	626644	635609	644478	653254	661937	670531	1
900	589944	599311	608573	617734	626795	635758	644625	653399	662081	670674	0

21 Hours.

238

22 Hours.

	40"	41"	42"	43"	44"	45"	46"	47"	48"
	25 deg.				26 deg.				27 de
0	0.670674	0.679177	0.687595	0.695927	0.704176	0.712343	0.720431	0.728439	0.736371
1	0.670818	0.679318	0.687734	0.696065	0.704313	0.712479	0.720565	0.728572	0.736502
2	0.670959	0.679459	0.687874	0.696203	0.704450	0.712614	0.720699	0.728705	0.736634
3	0.671101	0.679600	0.688013	0.696341	0.704586	0.712750	0.720833	0.728838	0.736765
4	0.671243	0.679741	0.688153	0.696479	0.704723	0.712885	0.720967	0.728970	0.736897
5	0.671385	0.679882	0.688292	0.696618	0.704860	0.713020	0.721101	0.729103	0.737028
6	0.671528	0.680023	0.688432	0.696756	0.704996	0.713156	0.721235	0.729236	0.737159
7	0.671670	0.680164	0.688571	0.696894	0.705133	0.713291	0.721369	0.729368	0.737291
8	0.671812	0.680305	0.688710	0.697032	0.705270	0.713426	0.721503	0.729501	0.737422
9	0.671955	0.680445	0.688850	0.697170	0.705406	0.713562	0.721637	0.729634	0.737554
10	0.672097	0.680586	0.688989	0.697308	0.705543	0.713697	0.721771	0.729766	0.737685
11	0.672239	0.680727	0.689128	0.697445	0.705679	0.713832	0.721905	0.729899	0.737816
12	0.672381	0.680868	0.689268	0.697583	0.705816	0.713967	0.722039	0.730032	0.737948
13	0.672523	0.681006	0.689407	0.697721	0.705952	0.714102	0.722172	0.730164	0.738079
14	0.672665	0.681149	0.689546	0.697859	0.706089	0.714238	0.722306	0.730297	0.738210
15	0.672808	0.681290	0.689685	0.697997	0.706225	0.714373	0.722440	0.730429	0.738341
16	0.672950	0.681430	0.689825	0.698135	0.706362	0.714508	0.722574	0.730562	0.738473
17	0.673092	0.681571	0.689964	0.698273	0.706498	0.714643	0.722708	0.730694	0.738604
18	0.673234	0.681711	0.690103	0.698410	0.706635	0.714778	0.722841	0.730827	0.738735
19	0.673376	0.681852	0.690242	0.698548	0.706771	0.714913	0.722975	0.730959	0.738866
20	0.673518	0.681993	0.690381	0.698686	0.706908	0.715048	0.723109	0.731092	0.738997
21	0.673660	0.682133	0.690520	0.698824	0.707044	0.715183	0.723242	0.731224	0.739128
22	0.673802	0.682274	0.690660	0.698961	0.707180	0.715318	0.723376	0.731356	0.739260
23	0.673944	0.682414	0.690799	0.699099	0.707316	0.715453	0.723510	0.731489	0.739391
24	0.674086	0.682555	0.690938	0.699237	0.707453	0.715588	0.723643	0.731621	0.739522
25	0.674227	0.682695	0.691077	0.699374	0.707589	0.715723	0.723777	0.731753	0.739653
26	0.674369	0.682835	0.691216	0.699512	0.707725	0.715858	0.723911	0.731886	0.739784
27	0.674511	0.682976	0.691354	0.699649	0.707861	0.715993	0.724044	0.732018	0.739915
28	0.674653	0.683116	0.691493	0.699787	0.707998	0.716127	0.724178	0.732150	0.740046
29	0.674795	0.683256	0.691632	0.699924	0.708134	0.716262	0.724311	0.732282	0.740177
30	0.674936	0.683397	0.691771	0.700062	0.708270	0.716397	0.724445	0.732414	0.740308
31	0.675078	0.683537	0.691910	0.700199	0.708406	0.716532	0.724578	0.732547	0.740438
32	0.675220	0.683677	0.692049	0.700337	0.708542	0.716667	0.724712	0.732679	0.740569
33	0.675361	0.683817	0.692188	0.700474	0.708678	0.716801	0.724845	0.732811	0.740700
34	0.675503	0.683958	0.692327	0.700612	0.708814	0.716936	0.724978	0.732943	0.740831
35	0.675645	0.684098	0.692465	0.700749	0.708950	0.717071	0.725112	0.733075	0.740962
36	0.675786	0.684238	0.692604	0.700886	0.709086	0.717205	0.725245	0.733207	0.741093
37	0.675928	0.684378	0.692743	0.701024	0.709222	0.717340	0.725378	0.733339	0.741223
38	0.676069	0.684518	0.692881	0.701161	0.709358	0.717475	0.725512	0.733471	0.741354
39	0.676211	0.684658	0.693020	0.701298	0.709494	0.717609	0.725645	0.733603	0.741485
40	0.676352	0.684798	0.693159	0.701436	0.709630	0.717744	0.725778	0.733735	0.741616
41	0.676494	0.684938	0.693297	0.701573	0.709766	0.717878	0.725912	0.733867	0.741746
42	0.676635	0.685078	0.693436	0.701710	0.709902	0.718013	0.726045	0.733999	0.741877
43	0.676777	0.685218	0.693575	0.701847	0.710038	0.718147	0.726178	0.734131	0.742008
44	0.676918	0.685358	0.693713	0.701984	0.710173	0.718282	0.726311	0.734263	0.742138
45	0.677060	0.685498	0.693852	0.702121	0.710309	0.718416	0.726444	0.734395	0.742269
46	0.677201	0.685638	0.693990	0.702259	0.710445	0.718551	0.726578	0.734527	0.742400
47	0.677342	0.685778	0.694129	0.702396	0.710581	0.718685	0.726711	0.734659	0.742530
48	0.677484	0.685918	0.694267	0.702533	0.710716	0.718820	0.726844	0.734790	0.742661
49	0.677625	0.686058	0.694406	0.702670	0.710852	0.718954	0.726977	0.734922	0.742791
50	0.677766	0.686198	0.694544	0.702807	0.710988	0.719088	0.727110	0.735054	0.742922
51	0.677907	0.686337	0.694682	0.702944	0.711123	0.719223	0.727243	0.735186	0.743052
52	0.678049	0.686477	0.694821	0.703081	0.711259	0.719357	0.727376	0.735317	0.743183
53	0.678190	0.686617	0.694959	0.703218	0.711395	0.719491	0.727509	0.735449	0.743313
54	0.678331	0.686757	0.695097	0.703355	0.711530	0.719626	0.727642	0.735581	0.743444
55	0.678472	0.686896	0.695236	0.703492	0.711666	0.719760	0.727775	0.735712	0.743574
56	0.678613	0.687036	0.695374	0.703629	0.711801	0.719894	0.727908	0.735844	0.743705
57	0.678754	0.687176	0.695512	0.703765	0.711937	0.720028	0.728041	0.735976	0.743835
58	0.678895	0.687315	0.695651	0.703902	0.712073	0.720162	0.728174	0.736107	0.743965
59	0.679036	0.687455	0.695789	0.704039	0.712208	0.720297	0.728306	0.736239	0.744096
60	0.679177	0.687595	0.695927	0.704176	0.712343	0.720431	0.728439	0.736371	0.744226
	19"	19"	17"	16"	15"	14"	13"	12"	11"

50"		51"	52"	53"	54"	55"	56"	57"	58"	59"	
27 deg.			28 deg.				29 deg.				
0	8.752007	8.759715	8.767350	8.774916	8.782411	8.789839	8.797199	8.804494	8.811723	8.818889	60
15	752136	759842	767477	775041	782536	789962	797321	804615	811843	819008	59
30	752265	759970	767604	775167	782660	790085	797443	804736	811963	819127	58
45	752394	760098	767730	775292	782784	790208	797566	804857	812083	819246	57
0	8.752523	8.760226	8.767857	8.775417	8.782909	8.790332	8.797688	8.804978	8.812203	8.819365	56
15	752652	760353	767983	775543	783033	790455	797810	805099	812323	819484	55
30	752781	760481	768110	775668	783157	790578	797932	805220	812443	819602	54
45	752910	760609	768237	775794	783281	790701	798054	805341	812563	819721	53
0	8.753039	8.760737	8.768363	8.775919	8.783406	8.790824	8.798176	8.805461	8.812683	8.819840	52
15	753168	760864	768490	776044	783530	790947	798298	805582	812802	819959	51
30	753296	760992	768616	776170	783654	791070	798420	805703	812922	820078	50
45	753425	761120	768743	776295	783778	791193	798541	805824	813042	820196	49
0	8.753554	8.761247	8.768869	8.776420	8.783902	8.791316	8.798663	8.805945	8.813162	8.820315	48
15	753683	761375	768995	776545	784026	791439	798785	806066	813281	820434	47
30	753812	761503	769122	776671	784150	791562	798907	806186	813401	820552	46
45	753941	761630	769248	776796	784274	791685	799029	806307	813521	820671	45
0	8.754069	8.761758	8.769375	8.776921	8.784399	8.791808	8.799151	8.806428	8.813641	8.820790	44
15	754198	761885	769501	777046	784523	791931	799273	806549	813760	820908	43
30	754327	762013	769627	777172	784647	792054	799395	806669	813880	821027	42
45	754465	762140	769754	777297	784771	792177	799516	806790	813999	821145	41
0	8.754584	8.762268	8.769880	8.777422	8.784895	8.792300	8.799638	8.806911	8.814119	8.821264	40
15	754713	762395	770006	777547	785019	792423	799760	807031	814239	821382	39
30	754841	762523	770132	777672	785143	792545	799882	807152	814358	821501	38
45	754970	762650	770259	777797	785266	792668	800003	807273	814478	821619	37
0	8.755099	8.762777	8.770385	8.777922	8.785390	8.792791	8.800125	8.807393	8.814597	8.821738	36
15	755227	762905	770511	778047	785514	792914	800247	807514	814717	821856	35
30	755356	763032	770637	778172	785638	793037	800368	807635	814836	821975	34
45	755484	763159	770763	778297	785762	793159	800490	807755	814956	822093	33
0	8.755613	8.763287	8.770889	8.778422	8.785886	8.793282	8.800612	8.807876	8.815075	8.822212	32
15	755741	763414	771016	778547	786010	793405	800733	807996	815195	822330	31
30	755870	763541	771142	778672	786134	793527	800855	808117	815314	822449	30
45	755998	763669	771268	778797	786257	793650	800976	808237	815434	822567	29
0	8.756127	8.763796	8.771394	8.778922	8.786381	8.793773	8.801098	8.808358	8.815553	8.822685	28
15	756255	763923	771520	779047	786505	793895	801219	808478	815672	822804	27
30	756383	764050	771646	779172	786629	794018	801341	808598	815792	822922	26
45	756512	764177	771772	779296	786752	794140	801462	808719	815911	823040	25
0	8.756640	8.764305	8.771898	8.779421	8.786876	8.794263	8.801584	8.808839	8.816031	8.823159	24
15	756768	764432	772024	779546	787000	794386	801705	808960	816150	823277	23
30	756897	764559	772150	779671	787123	794508	801827	809080	816269	823395	22
45	757025	764686	772276	779796	787247	794631	801948	809200	816388	823513	21
0	8.757153	8.764813	8.772402	8.779920	8.787370	8.794753	8.802070	8.809321	8.816508	8.823632	20
15	757282	764940	772527	780045	787494	794876	802191	809441	816627	823750	19
30	757410	765067	772653	780170	787618	794998	802312	809561	816746	823868	18
45	757538	765194	772779	780294	787741	795121	802434	809682	816865	823986	17
0	8.757666	8.765321	8.772905	8.780419	8.787865	8.795243	8.802555	8.809802	8.816985	8.824104	16
15	757794	765448	773031	780544	787988	795365	802676	809922	817104	824222	15
30	757923	765575	773157	780668	788112	795488	802798	810042	817223	824341	14
45	758051	765702	773282	780793	788235	795610	802919	810162	817342	824459	13
0	8.758179	8.765829	8.773408	8.780918	8.788359	8.795733	8.803040	8.810283	8.817461	8.824577	12
15	758307	765956	773534	781042	788482	795855	803161	810403	817580	824695	11
30	758435	766083	773660	781167	788606	795977	803283	810523	817699	824813	10
45	758563	766209	773785	781291	788729	796099	803404	810643	817818	824931	9
0	8.758691	8.766336	8.773911	8.781416	8.788852	8.796222	8.803525	8.810763	8.817938	8.825049	8
15	758819	766463	774037	781540	788976	796344	803646	810883	818056	825167	7
30	758947	766590	774162	781665	789099	796466	803767	811003	818176	825285	6
45	759075	766717	774288	781789	789222	796588	803888	811123	818295	825403	5
0	8.759203	8.766844	8.774413	8.781914	8.789346	8.796711	8.804010	8.811243	8.818414	8.825521	4
15	759331	766970	774539	782038	789469	796833	804131	811363	818532	825639	3
30	759459	767097	774664	782163	789592	796955	804252	811483	818651	825757	2
45	759587	767224	774790	782287	789716	797077	804373	811603	818770	825875	1
0	8.759715	8.767350	8.774916	8.782411	8.789839	8.797199	8.804494	8.811723	8.818889	8.825992	0
8"		7"	6"	5"	4"	3"	2"	1"	0"		

	0"	1"	2"	3"	4"	5"	6"	7"	8"
	30 deg				31 deg.				32 de
0 0	8.825992	8.833034	8.840015	8.846936	8.853798	8.860602	8.867349	8.874040	8.880676
1 1	8.826110	8.833151	8.840130	8.847050	8.853912	8.860715	8.867461	8.874151	8.880786
2 30	8.826228	8.833268	8.840246	8.847165	8.854025	8.860828	8.867573	8.874262	8.880896
3 45	8.826346	8.833384	8.840362	8.847280	8.854139	8.860941	8.867685	8.874373	8.881006
4 0	8.826464	8.833501	8.840478	8.847395	8.854253	8.861053	8.867797	8.874484	8.881117
5 15	8.826582	8.833616	8.840594	8.847510	8.854367	8.861166	8.867909	8.874592	8.881227
6 30	8.826699	8.833735	8.840709	8.847624	8.854481	8.861279	8.868021	8.874706	8.881337
7 45	8.826817	8.833851	8.840825	8.847739	8.854594	8.861392	8.868133	8.874817	8.881447
8 0	8.826935	8.833968	8.840941	8.847854	8.854708	8.861505	8.868245	8.874929	8.881557
9 15	8.827053	8.834085	8.841056	8.847969	8.854822	8.861618	8.868356	8.875039	8.881667
10 30	8.827170	8.834202	8.841172	8.848083	8.854936	8.861730	8.868468	8.875150	8.881777
11 45	8.827288	8.834318	8.841289	8.848198	8.855049	8.861843	8.868580	8.875261	8.881887
12 0	8.827406	8.834435	8.841404	8.848313	8.855163	8.861956	8.868692	8.875372	8.881997
13 15	8.827523	8.834551	8.841519	8.848427	8.855277	8.862069	8.868804	8.875483	8.882107
14 30	8.827641	8.834668	8.841635	8.848542	8.855390	8.862181	8.868915	8.875594	8.882217
15 45	8.827759	8.834785	8.841750	8.848656	8.855504	8.862294	8.869027	8.875704	8.882327
16 0	8.827876	8.834901	8.841866	8.848771	8.855618	8.862407	8.869139	8.875815	8.882436
17 15	8.827994	8.835018	8.841981	8.848886	8.855731	8.862519	8.869251	8.875926	8.882546
18 30	8.828111	8.835134	8.842097	8.849000	8.855845	8.862632	8.869362	8.876037	8.882656
19 45	8.828229	8.835251	8.842213	8.849115	8.855959	8.862745	8.869474	8.876148	8.882766
20 0	8.828346	8.835367	8.842328	8.849229	8.856072	8.862857	8.869586	8.876258	8.882876
21 15	8.828464	8.835484	8.842444	8.849344	8.856186	8.862970	8.869697	8.876369	8.882986
22 30	8.828581	8.835600	8.842559	8.849458	8.856299	8.863082	8.869809	8.876480	8.883096
23 45	8.828699	8.835717	8.842675	8.849573	8.856413	8.863195	8.869921	8.876590	8.883205
24 0	8.828816	8.835833	8.842790	8.849687	8.856526	8.863308	8.870032	8.876701	8.883315
25 15	8.828934	8.835950	8.842905	8.849802	8.856640	8.863420	8.870144	8.876812	8.883425
26 30	8.829051	8.836066	8.843021	8.849916	8.856753	8.863533	8.870255	8.876923	8.883535
27 45	8.829169	8.836183	8.843136	8.850031	8.856867	8.863645	8.870367	8.877033	8.883644
28 0	8.829286	8.836299	8.843252	8.850145	8.856980	8.863758	8.870479	8.877144	8.883754
29 15	8.829403	8.836415	8.843367	8.850259	8.857093	8.863870	8.870590	8.877254	8.883864
30 30	8.829521	8.836532	8.843482	8.850374	8.857207	8.863983	8.870702	8.877368	8.883974
31 45	8.829638	8.836648	8.843598	8.850489	8.857320	8.864095	8.870813	8.877476	8.884083
32 0	8.829756	8.836764	8.843713	8.850603	8.857434	8.864207	8.870923	8.877586	8.884193
33 15	8.829873	8.836881	8.843828	8.850717	8.857547	8.864320	8.871036	8.877697	8.884303
34 30	8.829990	8.836997	8.843944	8.850831	8.857660	8.864432	8.871148	8.877807	8.884412
35 45	8.830107	8.837113	8.844059	8.850945	8.857774	8.864545	8.871259	8.877918	8.884522
36 0	8.830225	8.837230	8.844174	8.851060	8.857887	8.864657	8.871370	8.878028	8.884632
37 15	8.830342	8.837346	8.844289	8.851174	8.858000	8.864769	8.871482	8.878139	8.884741
38 30	8.830459	8.837462	8.844405	8.851289	8.858114	8.864882	8.871593	8.878249	8.884851
39 45	8.830576	8.837578	8.844520	8.851403	8.858227	8.864994	8.871705	8.878360	8.884960
40 0	8.830694	8.837694	8.844635	8.851517	8.858340	8.865106	8.871816	8.878470	8.885070
41 15	8.830811	8.837810	8.844750	8.851631	8.858453	8.865219	8.871927	8.878581	8.885179
42 30	8.830928	8.837927	8.844865	8.851745	8.858567	8.865331	8.872039	8.878691	8.885289
43 45	8.831045	8.838043	8.844981	8.851859	8.858680	8.865443	8.872150	8.878802	8.885398
44 0	8.831162	8.838159	8.845096	8.851973	8.858793	8.865555	8.872261	8.878912	8.885508
45 15	8.831279	8.838275	8.845211	8.852088	8.858906	8.865668	8.872373	8.879022	8.885617
46 30	8.831396	8.838391	8.845326	8.852202	8.859019	8.865780	8.872484	8.879133	8.885727
47 45	8.831513	8.838507	8.845441	8.852316	8.859132	8.865892	8.872595	8.879243	8.885836
48 0	8.831630	8.838623	8.845556	8.852430	8.859246	8.866004	8.872706	8.879353	8.885946
49 15	8.831748	8.838739	8.845671	8.852544	8.859359	8.866116	8.872818	8.879464	8.886055
50 30	8.831865	8.838855	8.845786	8.852658	8.859472	8.866229	8.872929	8.879574	8.886164
51 45	8.831982	8.838971	8.845901	8.852772	8.859585	8.866341	8.873040	8.879684	8.886274
52 0	8.832099	8.839087	8.846016	8.852886	8.859698	8.866453	8.873151	8.879795	8.886383
53 15	8.832216	8.839203	8.846131	8.853000	8.859811	8.866565	8.873262	8.879905	8.886492
54 30	8.832332	8.839319	8.846246	8.853114	8.859924	8.866677	8.873374	8.880015	8.886602
55 45	8.832449	8.839435	8.846361	8.853228	8.860037	8.866789	8.873485	8.880125	8.886711
56 0	8.832566	8.839551	8.846476	8.853342	8.860150	8.866901	8.873596	8.880235	8.886821
57 15	8.832683	8.839667	8.846591	8.853456	8.860263	8.867013	8.873707	8.880346	8.886930
58 30	8.832800	8.839783	8.846706	8.853570	8.860376	8.867125	8.873818	8.880456	8.887039
59 45	8.832917	8.839899	8.846821	8.853684	8.860489	8.867237	8.873929	8.880566	8.887148
60 0	8.833034	8.840015	8.846936	8.853798	8.860602	8.867349	8.874040	8.880676	8.887258
	59"	58"	57"	56"	55"	54"	53"	52"	51"

10"	11"	12"	13"	14"	15"	16"	17"	18"	19"
32 deg.	33 deg.					34 deg.			
8.893735	8.900261	8.906684	8.913055	8.919377	8.925648	8.931871	8.938045	8.944171	8.950251
8.893894	8.900368	8.906790	8.913161	8.919482	8.925752	8.931974	8.938147	8.944273	8.950351
8.894002	8.900475	8.906897	8.913267	8.919547	8.925856	8.932077	8.938250	8.944375	8.950452
8.894110	8.900583	8.907003	8.913373	8.919691	8.925960	8.932180	8.938352	8.944476	8.950553
8.894219	8.900690	8.907110	8.913478	8.919796	8.926065	8.932284	8.938455	8.944578	8.950654
8.894327	8.900798	8.907216	8.913584	8.919901	8.926169	8.932387	8.938557	8.944680	8.950755
8.894435	8.900905	8.907323	8.913690	8.920006	8.926273	8.932490	8.938660	8.944781	8.950856
8.894544	8.901013	8.907430	8.913795	8.920111	8.926377	8.932593	8.938762	8.944883	8.950957
8.894652	8.901120	8.907536	8.913901	8.920216	8.926481	8.932697	8.938864	8.944984	8.951058
8.894760	8.901227	8.907643	8.914007	8.920321	8.926585	8.932800	8.938967	8.945086	8.951158
8.894868	8.901335	8.907749	8.914112	8.920425	8.926689	8.932903	8.939069	8.945188	8.951259
8.894976	8.901442	8.907855	8.914218	8.920530	8.926793	8.933006	8.939171	8.945289	8.951360
8.895085	8.901549	8.907962	8.914324	8.920635	8.926897	8.933109	8.939274	8.945391	8.951461
8.895193	8.901657	8.908068	8.914429	8.920740	8.927000	8.933212	8.939376	8.945492	8.951562
8.895301	8.901764	8.908175	8.914535	8.920844	8.927104	8.933316	8.939479	8.945594	8.951662
8.895409	8.901871	8.908281	8.914640	8.920949	8.927208	8.933419	8.939581	8.945695	8.951763
8.895517	8.901978	8.908388	8.914746	8.921054	8.927312	8.933522	8.939683	8.945797	8.951864
8.895625	8.902086	8.908494	8.914852	8.921159	8.927416	8.933625	8.939785	8.945898	8.951965
8.895731	8.902193	8.908600	8.914957	8.921263	8.927520	8.933728	8.939888	8.946000	8.952065
8.895842	8.902300	8.908707	8.915063	8.921368	8.927624	8.933831	8.939990	8.946101	8.952166
8.895950	8.902407	8.908813	8.915168	8.921473	8.927728	8.933934	8.940092	8.946203	8.952267
8.896058	8.902514	8.908919	8.915274	8.921577	8.927832	8.934037	8.940194	8.946304	8.952367
8.896166	8.902622	8.909026	8.915379	8.921681	8.927935	8.934140	8.940297	8.946406	8.952468
8.896274	8.902729	8.909132	8.915484	8.921787	8.928039	8.934243	8.940399	8.946507	8.952569
8.896382	8.902836	8.909234	8.915590	8.921891	8.928143	8.934346	8.940501	8.946609	8.952669
8.896490	8.902943	8.909345	8.915695	8.921996	8.928247	8.934449	8.940603	8.946710	8.952770
8.896598	8.903050	8.909451	8.915801	8.922100	8.928351	8.934552	8.940705	8.946811	8.952871
8.896706	8.903157	8.909557	8.915906	8.922205	8.928454	8.934655	8.940808	8.946913	8.952971
8.896814	8.903264	8.909663	8.916012	8.922310	8.928558	8.934758	8.940910	8.947014	8.953072
8.896922	8.903371	8.909770	8.916117	8.922414	8.928662	8.934861	8.941012	8.947115	8.953172
8.897030	8.903479	8.909877	8.916222	8.922519	8.928765	8.934964	8.941114	8.947217	8.953272
8.897137	8.903586	8.909982	8.916328	8.922623	8.928869	8.935067	8.941216	8.947318	8.953373
8.897245	8.903693	8.910088	8.916433	8.922728	8.928973	8.935170	8.941318	8.947419	8.953474
8.897353	8.903800	8.910194	8.916539	8.922832	8.929077	8.935272	8.941420	8.947520	8.953574
8.897461	8.903907	8.910301	8.916644	8.922937	8.929180	8.935375	8.941522	8.947622	8.953675
8.897569	8.904014	8.910407	8.916749	8.923041	8.929284	8.935478	8.941624	8.947723	8.953775
8.897677	8.904121	8.910513	8.916854	8.923146	8.929388	8.935581	8.941726	8.947824	8.953876
8.897785	8.904228	8.910619	8.916959	8.923250	8.929491	8.935684	8.941828	8.947926	8.953976
8.897892	8.904334	8.910725	8.917065	8.923354	8.929595	8.935787	8.941930	8.948027	8.954077
8.898000	8.904441	8.910831	8.917170	8.923459	8.929698	8.935889	8.942032	8.948128	8.954177
8.898108	8.904548	8.910937	8.917275	8.923563	8.929802	8.935992	8.942134	8.948229	8.954278
8.898216	8.904655	8.911043	8.917380	8.923668	8.929905	8.936095	8.942236	8.948330	8.954378
8.898324	8.904762	8.911149	8.917486	8.923772	8.930009	8.936198	8.942338	8.948432	8.954479
8.898431	8.904869	8.911255	8.917591	8.923876	8.930112	8.936300	8.942440	8.948533	8.954579
8.898539	8.904976	8.911361	8.917696	8.923981	8.930216	8.936403	8.942542	8.948634	8.954679
8.898647	8.905083	8.911467	8.917801	8.924085	8.930320	8.936506	8.942644	8.948735	8.954780
8.898754	8.905190	8.911573	8.917906	8.924189	8.930423	8.936608	8.942746	8.948836	8.954880
8.898862	8.905296	8.911679	8.918011	8.924294	8.930527	8.936711	8.942848	8.948937	8.954980
8.898970	8.905403	8.911785	8.918116	8.924398	8.930630	8.936814	8.942950	8.949038	8.955081
8.899077	8.905510	8.911891	8.918222	8.924502	8.930733	8.936916	8.943052	8.949139	8.955181
8.899185	8.905617	8.911997	8.918327	8.924606	8.930837	8.937019	8.943153	8.949241	8.955281
8.899293	8.905723	8.912103	8.918432	8.924711	8.930940	8.937122	8.943255	8.949342	8.955381
8.899400	8.905830	8.912209	8.918537	8.924815	8.931044	8.937224	8.943357	8.949443	8.955482
8.899508	8.905937	8.912315	8.918642	8.924919	8.931147	8.937327	8.943459	8.949544	8.955583
8.899615	8.906044	8.912421	8.918747	8.925023	8.931251	8.937430	8.943561	8.949645	8.955682
8.899723	8.906150	8.912526	8.918852	8.925127	8.931354	8.937532	8.943662	8.949746	8.955783
8.899831	8.906257	8.912632	8.918957	8.925232	8.931457	8.937635	8.943764	8.949847	8.955883
8.899938	8.906364	8.912738	8.919062	8.925336	8.931561	8.937737	8.943866	8.949948	8.955983
8.900046	8.906470	8.912844	8.919167	8.925440	8.931664	8.937840	8.943968	8.950049	8.956083
8.900153	8.906577	8.912950	8.919272	8.925544	8.931767	8.937942	8.944069	8.950150	8.956183
8.900261	8.906684	8.913055	8.919377	8.925648	8.931871	8.938045	8.944171	8.950251	8.956284

2 Hours.

Log. Havensua. (r)

3 Hours.

	20"	21"	22"	23"	24"	25"	26"	27"	28"	29"
	35 deg.				36 deg.				37 deg.	
0	8.956284	8.962271	8.968213	8.974111	8.979963	8.985775	8.991543	8.997289	9.003033	9.008796
1	8.956384	8.962370	8.968312	8.974209	8.980062	8.985872	8.991639	8.997364	9.003047	9.008796
2	8.956484	8.962470	8.968410	8.974307	8.980159	8.985968	8.991735	8.997459	9.003142	9.008896
3	8.956584	8.962569	8.968509	8.974405	8.980256	8.986065	8.991830	8.997554	9.003236	9.008975
4	8.956684	8.962668	8.968608	8.974502	8.980353	8.986161	8.991926	8.997649	9.003330	9.009071
5	8.956784	8.962768	8.968706	8.974599	8.980451	8.986258	8.992022	8.997744	9.003425	9.009165
6	8.956884	8.962867	8.968805	8.974696	8.980548	8.986354	8.992118	8.997839	9.003519	9.009264
7	8.956984	8.962966	8.968903	8.974796	8.980645	8.986450	8.992213	8.997934	9.003613	9.009363
8	8.957085	8.963066	8.969003	8.974894	8.980742	8.986547	8.992309	8.998029	9.003708	9.009462
9	8.957185	8.963165	8.969101	8.974992	8.980839	8.986643	8.992405	8.998124	9.003802	9.009561
10	8.957285	8.963264	8.969199	8.975090	8.980936	8.986740	8.992500	8.998219	9.003896	9.009660
11	8.957385	8.963364	8.969298	8.975187	8.981033	8.986836	8.992596	8.998314	9.003990	9.009759
12	8.957485	8.963463	8.969396	8.975285	8.981130	8.986932	8.992691	8.998409	9.004085	9.009858
13	8.957585	8.963562	8.969495	8.975383	8.981227	8.987029	8.992787	8.998504	9.004179	9.009957
14	8.957685	8.963661	8.969594	8.975481	8.981324	8.987125	8.992883	8.998601	9.004274	9.010056
15	8.957785	8.963761	8.969692	8.975578	8.981421	8.987221	8.992978	8.998694	9.004367	9.010155
16	8.957885	8.963860	8.969790	8.975676	8.981518	8.987318	8.993074	8.998789	9.004462	9.010254
17	8.957985	8.963959	8.969889	8.975774	8.981615	8.987414	8.993170	8.998883	9.004556	9.010353
18	8.958085	8.964058	8.969987	8.975872	8.981712	8.987510	8.993265	8.998978	9.004650	9.010452
19	8.958184	8.964157	8.970086	8.975969	8.981809	8.987606	8.993361	8.999073	9.004744	9.010551
20	8.958284	8.964257	8.970184	8.976067	8.981906	8.987703	8.993456	8.999168	9.004838	9.010650
21	8.958384	8.964356	8.970282	8.976165	8.982003	8.987799	8.993552	8.999263	9.004933	9.010749
22	8.958484	8.964455	8.970381	8.976262	8.982100	8.987895	8.993647	8.999358	9.005027	9.010848
23	8.958584	8.964554	8.970479	8.976360	8.982197	8.987991	8.993743	8.999453	9.005121	9.010947
24	8.958684	8.964653	8.970578	8.976458	8.982294	8.988088	8.993838	8.999547	9.005215	9.011046
25	8.958784	8.964752	8.970676	8.976555	8.982391	8.988184	8.993934	8.999642	9.005309	9.011145
26	8.958884	8.964851	8.970774	8.976653	8.982488	8.988280	8.994029	8.999737	9.005403	9.011244
27	8.958983	8.964950	8.970873	8.976750	8.982585	8.988376	8.994125	8.999832	9.005497	9.011343
28	8.959083	8.965050	8.970971	8.976848	8.982682	8.988472	8.994220	8.999927	9.005591	9.011442
29	8.959183	8.965149	8.971069	8.976946	8.982778	8.988568	8.994316	9.000021	9.005685	9.011541
30	8.959283	8.965248	8.971168	8.977043	8.982875	8.988665	8.994411	9.000116	9.005779	9.011640
31	8.959383	8.965347	8.971266	8.977141	8.982972	8.988761	8.994507	9.000211	9.005873	9.011739
32	8.959482	8.965446	8.971364	8.977238	8.983069	8.988857	8.994602	9.000305	9.005968	9.011838
33	8.959582	8.965545	8.971462	8.977336	8.983166	8.988953	8.994697	9.000400	9.006062	9.011937
34	8.959682	8.965644	8.971561	8.977433	8.983263	8.989049	8.994793	9.000495	9.006156	9.012036
35	8.959782	8.965743	8.971659	8.977531	8.983359	8.989145	8.994888	9.000589	9.006250	9.012135
36	8.959881	8.965842	8.971757	8.977628	8.983456	8.989241	8.994984	9.000684	9.006344	9.012234
37	8.959981	8.965941	8.971855	8.977726	8.983553	8.989337	8.995079	9.000779	9.006438	9.012333
38	8.960081	8.966040	8.971953	8.977823	8.983650	8.989433	8.995174	9.000874	9.006532	9.012432
39	8.960180	8.966138	8.972052	8.977921	8.983746	8.989529	8.995270	9.000968	9.006626	9.012531
40	8.960280	8.966237	8.972150	8.978018	8.983843	8.989625	8.995365	9.001063	9.006719	9.012630
41	8.960380	8.966336	8.972248	8.978116	8.983940	8.989721	8.995460	9.001157	9.006813	9.012729
42	8.960479	8.966435	8.972346	8.978213	8.984037	8.989817	8.995555	9.001252	9.006907	9.012828
43	8.960579	8.966534	8.972444	8.978310	8.984133	8.989913	8.995651	9.001346	9.007001	9.012927
44	8.960678	8.966633	8.972542	8.978408	8.984230	8.990009	8.995746	9.001441	9.007095	9.013026
45	8.960778	8.966732	8.972641	8.978505	8.984327	8.990105	8.995841	9.001536	9.007189	9.013125
46	8.960878	8.966831	8.972739	8.978603	8.984423	8.990201	8.995937	9.001630	9.007283	9.013224
47	8.960977	8.966929	8.972837	8.978700	8.984520	8.990297	8.996032	9.001725	9.007377	9.013323
48	8.961077	8.967028	8.972935	8.978797	8.984617	8.990393	8.996127	9.001819	9.007471	9.013422
49	8.961177	8.967127	8.973033	8.978895	8.984713	8.990489	8.996222	9.001914	9.007564	9.013521
50	8.961276	8.967226	8.973131	8.978992	8.984810	8.990585	8.996317	9.002008	9.007658	9.013620
51	8.961376	8.967325	8.973229	8.979089	8.984906	8.990681	8.996413	9.002103	9.007752	9.013719
52	8.961475	8.967423	8.973327	8.979187	8.985003	8.990777	8.996508	9.002197	9.007846	9.013818
53	8.961575	8.967522	8.973425	8.979284	8.985100	8.990872	8.996603	9.002292	9.007939	9.013917
54	8.961674	8.967621	8.973523	8.979381	8.985196	8.990968	8.996698	9.002387	9.008033	9.014016
55	8.961774	8.967720	8.973621	8.979478	8.985293	8.991064	8.996793	9.002481	9.008127	9.014115
56	8.961873	8.967818	8.973719	8.979576	8.985389	8.991160	8.996888	9.002575	9.008221	9.014214
57	8.961973	8.967917	8.973817	8.979673	8.985486	8.991256	8.996983	9.002670	9.008315	9.014313
58	8.962072	8.968016	8.973915	8.979770	8.985582	8.991352	8.997079	9.002764	9.008408	9.014412
59	8.962171	8.968114	8.974013	8.979867	8.985679	8.991447	8.997174	9.002858	9.008502	9.014511
60	8.962271	8.968213	8.974111	8.979963	8.985775	8.991543	8.997269	9.002953	9.008596	9.014610
	39"	38"	37"	36"	35"	34"	33"	32"	31"	30"

31 Hours.

31 Hours.

2 Hours.

Log. Haversines. (f)

2 Hours.

	30"	31"	32"	33"	34"	35"	36"	37"	38"	39"
	37 deg.			38 deg.			39 deg.			
0	0.11198	0.19176	0.25384	0.30765	0.36213	0.41621	0.46991	0.52323	0.57619	0.62879
1	0.11291	0.19253	0.25475	0.30859	0.36304	0.41710	0.47080	0.52411	0.57707	0.62967
2	0.11381	0.19346	0.25567	0.30950	0.36394	0.41804	0.47169	0.52500	0.57795	0.63054
3	0.11477	0.19438	0.25659	0.31041	0.36484	0.41890	0.47258	0.52589	0.57883	0.63141
4	0.11570	0.19530	0.25751	0.31132	0.36575	0.41980	0.47347	0.52677	0.57971	0.63229
5	0.11663	0.19623	0.25843	0.31223	0.36665	0.42070	0.47436	0.52766	0.58059	0.63316
6	0.11756	0.19715	0.25934	0.31314	0.36756	0.42159	0.47525	0.52855	0.58147	0.63403
7	0.11849	0.19807	0.26026	0.31405	0.36846	0.42249	0.47613	0.52943	0.58235	0.63491
8	0.11942	0.19900	0.26117	0.31496	0.36936	0.42339	0.47704	0.53032	0.58323	0.63578
9	0.12035	0.20000	0.26209	0.31587	0.37027	0.42429	0.47793	0.53120	0.58411	0.63665
10	0.12128	0.20094	0.26301	0.31678	0.37117	0.42518	0.47882	0.53209	0.58500	0.63752
11	0.12221	0.20187	0.26392	0.31769	0.37207	0.42608	0.47971	0.53297	0.58588	0.63840
12	0.12314	0.20280	0.26484	0.31860	0.37298	0.42698	0.48060	0.53386	0.58677	0.63927
13	0.12407	0.20373	0.26575	0.31951	0.37388	0.42787	0.48149	0.53474	0.58765	0.64014
14	0.12500	0.20466	0.26667	0.32042	0.37478	0.42877	0.48238	0.53562	0.58854	0.64101
15	0.12593	0.20559	0.26758	0.32133	0.37569	0.42967	0.48327	0.53651	0.58943	0.64189
16	0.12686	0.20652	0.26850	0.32224	0.37659	0.43056	0.48416	0.53739	0.59032	0.64276
17	0.12779	0.20745	0.26941	0.32315	0.37749	0.43146	0.48505	0.53827	0.59120	0.64363
18	0.12872	0.20838	0.27032	0.32405	0.37839	0.43236	0.48594	0.53916	0.59209	0.64450
19	0.12965	0.20931	0.27123	0.32496	0.37930	0.43325	0.48683	0.54004	0.59298	0.64537
20	0.13058	0.21024	0.27214	0.32587	0.38020	0.43415	0.48772	0.54093	0.59387	0.64625
21	0.13151	0.21117	0.27305	0.32678	0.38110	0.43504	0.48861	0.54181	0.59476	0.64712
22	0.13244	0.21210	0.27396	0.32769	0.38200	0.43594	0.48950	0.54270	0.59565	0.64799
23	0.13337	0.21303	0.27487	0.32860	0.38291	0.43683	0.49039	0.54358	0.59654	0.64886
24	0.13430	0.21396	0.27578	0.32951	0.38381	0.43773	0.49128	0.54446	0.59743	0.64973
25	0.13523	0.21489	0.27669	0.33041	0.38471	0.43863	0.49217	0.54534	0.59832	0.65060
26	0.13616	0.21582	0.27760	0.33132	0.38561	0.43953	0.49306	0.54623	0.59921	0.65147
27	0.13709	0.21675	0.27851	0.33223	0.38651	0.44042	0.49395	0.54711	0.59999	0.65234
28	0.13802	0.21768	0.27942	0.33314	0.38741	0.44131	0.49484	0.54799	0.60088	0.65321
29	0.13895	0.21861	0.28033	0.33405	0.38832	0.44221	0.49573	0.54888	0.60176	0.65409
30	0.13988	0.21954	0.28124	0.33496	0.38922	0.44310	0.49661	0.54976	0.60265	0.65496
31	0.14081	0.22047	0.28215	0.33587	0.39012	0.44400	0.49750	0.55064	0.60354	0.65583
32	0.14174	0.22140	0.28306	0.33678	0.39102	0.44489	0.49839	0.55152	0.60443	0.65670
33	0.14267	0.22233	0.28397	0.33769	0.39192	0.44579	0.49928	0.55241	0.60532	0.65757
34	0.14360	0.22326	0.28488	0.33860	0.39282	0.44668	0.50017	0.55329	0.60621	0.65844
35	0.14453	0.22419	0.28579	0.33951	0.39372	0.44758	0.50106	0.55417	0.60710	0.65931
36	0.14546	0.22512	0.28670	0.34042	0.39462	0.44847	0.50195	0.55505	0.60799	0.66018
37	0.14639	0.22605	0.28761	0.34133	0.39552	0.44936	0.50284	0.55593	0.60888	0.66105
38	0.14732	0.22698	0.28852	0.34224	0.39642	0.45026	0.50372	0.55682	0.60977	0.66192
39	0.14825	0.22791	0.28943	0.34315	0.39732	0.45115	0.50461	0.55770	0.61066	0.66279
40	0.14918	0.22884	0.29034	0.34406	0.39822	0.45205	0.50550	0.55858	0.61155	0.66366
41	0.15011	0.22977	0.29125	0.34497	0.39912	0.45294	0.50638	0.55946	0.61244	0.66453
42	0.15104	0.23070	0.29216	0.34588	0.40002	0.45383	0.50727	0.56034	0.61333	0.66540
43	0.15197	0.23163	0.29307	0.34679	0.40092	0.45473	0.50816	0.56122	0.61422	0.66627
44	0.15290	0.23256	0.29398	0.34770	0.40182	0.45562	0.50905	0.56211	0.61511	0.66714
45	0.15383	0.23349	0.29489	0.34861	0.40272	0.45652	0.50993	0.56299	0.61600	0.66801
46	0.15476	0.23442	0.29580	0.34952	0.40362	0.45741	0.51082	0.56387	0.61689	0.66888
47	0.15569	0.23535	0.29671	0.35043	0.40452	0.45830	0.51171	0.56475	0.61778	0.66975
48	0.15662	0.23628	0.29762	0.35134	0.40542	0.45920	0.51260	0.56563	0.61867	0.67062
49	0.15755	0.23721	0.29853	0.35225	0.40632	0.46009	0.51348	0.56651	0.61956	0.67149
50	0.15848	0.23814	0.29944	0.35316	0.40722	0.46098	0.51437	0.56739	0.62045	0.67236
51	0.15941	0.23907	0.30035	0.35407	0.40812	0.46187	0.51526	0.56827	0.62134	0.67323
52	0.16034	0.24000	0.30126	0.35498	0.40902	0.46277	0.51614	0.56915	0.62223	0.67410
53	0.16127	0.24093	0.30217	0.35589	0.40992	0.46366	0.51703	0.57003	0.62312	0.67497
54	0.16220	0.24186	0.30308	0.35680	0.41082	0.46455	0.51792	0.57091	0.62401	0.67584
55	0.16313	0.24279	0.30399	0.35771	0.41172	0.46544	0.51880	0.57179	0.62490	0.67671
56	0.16406	0.24372	0.30490	0.35862	0.41262	0.46634	0.51969	0.57267	0.62579	0.67758
57	0.16499	0.24465	0.30581	0.35953	0.41352	0.46723	0.52057	0.57355	0.62668	0.67845
58	0.16592	0.24558	0.30672	0.36044	0.41442	0.46812	0.52146	0.57443	0.62757	0.67932
59	0.16685	0.24651	0.30763	0.36135	0.41532	0.46901	0.52235	0.57531	0.62846	0.68019
60	0.16778	0.24744	0.30854	0.36226	0.41622	0.46991	0.52324	0.57619	0.62935	0.68106

	40"	41"	42"	43"	44"	45"	46"	47"	48"	49"
	40 deg.				41 deg.				42 deg.	
0 0	0.068103	0.073292	0.078446	0.083565	0.088651	0.093702	0.098720	0.103706	0.108656	0.113579
1 15	0.068190	0.073379	0.078532	0.083650	0.088735	0.093786	0.098804	0.103788	0.108741	0.113661
2 30	0.068277	0.073465	0.078617	0.083735	0.088820	0.093870	0.098887	0.103871	0.108823	0.113742
3 45	0.068364	0.073551	0.078703	0.083820	0.088904	0.093954	0.098970	0.103954	0.108905	0.113824
4 0	0.068450	0.073637	0.078788	0.083903	0.088988	0.094038	0.099054	0.104037	0.108987	0.113906
5 15	0.068537	0.073723	0.078874	0.083990	0.089073	0.094122	0.099137	0.104119	0.109070	0.113987
6 30	0.068624	0.073809	0.078959	0.084075	0.089157	0.094205	0.099220	0.104202	0.109152	0.114069
7 45	0.068711	0.073895	0.079045	0.084160	0.089242	0.094289	0.099304	0.104285	0.109234	0.114151
8 0	0.068797	0.073981	0.079131	0.084245	0.089326	0.094373	0.099387	0.104368	0.109316	0.114233
9 15	0.068884	0.074067	0.079216	0.084330	0.089410	0.094457	0.099470	0.104450	0.109398	0.114314
10 30	0.068971	0.074154	0.079302	0.084415	0.089495	0.094541	0.099553	0.104533	0.109481	0.114396
11 45	0.069057	0.074240	0.079387	0.084500	0.089579	0.094625	0.099637	0.104616	0.109563	0.114477
12 0	0.069144	0.074326	0.079473	0.084585	0.089664	0.094708	0.099720	0.104699	0.109645	0.114559
13 15	0.069231	0.074412	0.079558	0.084670	0.089748	0.094792	0.099803	0.104781	0.109727	0.114641
14 30	0.069317	0.074498	0.079644	0.084755	0.089832	0.094876	0.099886	0.104864	0.109809	0.114722
15 45	0.069404	0.074584	0.079729	0.084840	0.089917	0.094960	0.099970	0.104947	0.109891	0.114804
16 0	0.069490	0.074670	0.079815	0.084925	0.090001	0.095044	0.100057	0.105030	0.109974	0.114886
17 15	0.069577	0.074756	0.079900	0.085010	0.090085	0.095127	0.100136	0.105112	0.110056	0.114967
18 30	0.069664	0.074842	0.079985	0.085094	0.090170	0.095211	0.100219	0.105193	0.110138	0.115049
19 45	0.069750	0.074928	0.080071	0.085179	0.090254	0.095295	0.100302	0.105277	0.110220	0.115130
20 0	0.069837	0.075014	0.080156	0.085264	0.090338	0.095379	0.100386	0.105360	0.110302	0.115212
21 15	0.069923	0.075100	0.080242	0.085349	0.090422	0.095462	0.100469	0.105443	0.110384	0.115293
22 30	0.070010	0.075186	0.080327	0.085434	0.090507	0.095546	0.100552	0.105525	0.110466	0.115375
23 45	0.070097	0.075272	0.080412	0.085519	0.090591	0.095630	0.100635	0.105608	0.110548	0.115457
24 0	0.070183	0.075358	0.080498	0.085604	0.090675	0.095713	0.100718	0.105690	0.110630	0.115539
25 15	0.070270	0.075444	0.080583	0.085688	0.090759	0.095797	0.100801	0.105773	0.110712	0.115620
26 30	0.070356	0.075530	0.080669	0.085773	0.090844	0.095881	0.100885	0.105856	0.110794	0.115701
27 45	0.070443	0.075616	0.080754	0.085858	0.090928	0.095964	0.100968	0.105938	0.110876	0.115783
28 0	0.070529	0.075702	0.080839	0.085943	0.091012	0.096048	0.101051	0.106021	0.110959	0.115864
29 15	0.070616	0.075787	0.080925	0.086027	0.091096	0.096132	0.101134	0.106104	0.111041	0.115945
30 30	0.070702	0.075873	0.081010	0.086112	0.091181	0.096215	0.101217	0.106186	0.111123	0.116027
31 45	0.070789	0.075959	0.081095	0.086197	0.091265	0.096299	0.101300	0.106269	0.111205	0.116109
32 0	0.070875	0.076045	0.081181	0.086282	0.091349	0.096383	0.101383	0.106351	0.111287	0.116190
33 15	0.070962	0.076131	0.081266	0.086366	0.091433	0.096466	0.101466	0.106434	0.111369	0.116272
34 30	0.071048	0.076217	0.081351	0.086451	0.091517	0.096550	0.101549	0.106516	0.111451	0.116353
35 45	0.071134	0.076303	0.081436	0.086536	0.091601	0.096633	0.101632	0.106599	0.111533	0.116434
36 0	0.071221	0.076389	0.081522	0.086621	0.091686	0.096717	0.101715	0.106681	0.111614	0.116516
37 15	0.071307	0.076474	0.081607	0.086705	0.091770	0.096801	0.101798	0.106764	0.111696	0.116597
38 30	0.071394	0.076560	0.081692	0.086790	0.091854	0.096884	0.101881	0.106846	0.111778	0.116679
39 45	0.071480	0.076646	0.081777	0.086875	0.091938	0.096968	0.101964	0.106928	0.111860	0.116760
40 0	0.071566	0.076732	0.081863	0.086959	0.092022	0.097051	0.102047	0.107011	0.111942	0.116841
41 15	0.071653	0.076818	0.081948	0.087044	0.092106	0.097135	0.102130	0.107093	0.112024	0.116923
42 30	0.071739	0.076903	0.082033	0.087129	0.092190	0.097218	0.102213	0.107176	0.112106	0.117004
43 45	0.071826	0.076989	0.082118	0.087213	0.092274	0.097302	0.102296	0.107258	0.112188	0.117086
44 0	0.071912	0.077075	0.082204	0.087298	0.092358	0.097385	0.102379	0.107341	0.112270	0.117167
45 15	0.071998	0.077161	0.082289	0.087382	0.092442	0.097469	0.102462	0.107423	0.112352	0.117248
46 30	0.072085	0.077247	0.082374	0.087467	0.092526	0.097552	0.102545	0.107506	0.112434	0.117330
47 45	0.072171	0.077332	0.082459	0.087552	0.092610	0.097636	0.102628	0.107588	0.112515	0.117411
48 0	0.072257	0.077418	0.082544	0.087636	0.092694	0.097719	0.102711	0.107670	0.112597	0.117492
49 15	0.072343	0.077504	0.082629	0.087721	0.092779	0.097803	0.102794	0.107753	0.112679	0.117574
50 30	0.072430	0.077589	0.082715	0.087805	0.092863	0.097886	0.102877	0.107835	0.112761	0.117655
51 45	0.072516	0.077675	0.082800	0.087890	0.092947	0.097970	0.102960	0.107917	0.112843	0.117736
52 0	0.072602	0.077761	0.082885	0.087975	0.093031	0.098053	0.103043	0.108000	0.112925	0.117818
53 15	0.072689	0.077846	0.082970	0.088059	0.093114	0.098137	0.103126	0.108082	0.113006	0.117899
54 30	0.072775	0.077932	0.083055	0.088144	0.093198	0.098220	0.103209	0.108165	0.113088	0.117980
55 45	0.072861	0.078018	0.083140	0.088228	0.093282	0.098303	0.103291	0.108247	0.113170	0.118061
56 0	0.072947	0.078103	0.083225	0.088313	0.093366	0.098387	0.103374	0.108329	0.113252	0.118143
57 15	0.073033	0.078189	0.083310	0.088397	0.093450	0.098470	0.103457	0.108411	0.113334	0.118224
58 30	0.073120	0.078275	0.083395	0.088482	0.093534	0.098554	0.103540	0.108494	0.113415	0.118305
59 45	0.073206	0.078360	0.083480	0.088566	0.093618	0.098637	0.103623	0.108576	0.113497	0.118386
60 0	0.073292	0.078446	0.083565	0.088651	0.093702	0.098720	0.103706	0.108656	0.113579	0.118468
	19"	18"	17"	16"	15"	14"	13"	12"	11"	10"

2 Hours.

Log. Haverline. (f)

2 Hours.

	50"	51"	52"	53"	54"	55"	56"	57"	58"	59"	
	42 deg.			43 deg.			44 deg.				
118468	9.118468	9.123325	9.128151	9.132946	9.137711	9.142446	9.147151	9.151826	9.156473	9.161090	60
118549	118549	123405	128231	133026	137790	142524	147229	151904	156559	161167	59
118630	118630	123486	128311	133106	137869	142603	147307	151982	156627	161244	58
118711	118711	123567	128391	133185	137948	142682	147385	152059	156704	161320	57
118792	9.118792	9.123647	9.128472	9.133265	9.138028	9.142760	9.147463	9.152137	9.156781	9.161397	56
118873	118873	123728	128552	133344	138107	142839	147542	152215	156859	161474	55
118955	118955	123809	128633	133424	138186	142918	147620	152292	156936	161550	54
119036	119036	123889	128712	133504	138265	142996	147698	152370	157013	161627	53
119117	9.119117	9.123970	9.128792	9.133583	9.138344	9.143075	9.147776	9.152448	9.157090	9.161704	52
119198	119198	124051	128872	133663	138423	143153	147854	152525	157167	161780	51
119279	119279	124131	128952	133742	138502	143232	147932	152603	157244	161857	50
119360	119360	124212	129032	133822	138581	143311	148010	152680	157321	161934	49
119441	9.119441	9.124292	9.129112	9.133902	9.138660	9.143389	9.148089	9.152758	9.157399	9.162010	48
119523	119523	124373	129192	133981	138739	143468	148166	152836	157476	162087	47
119604	119604	124454	129273	134061	138819	143546	148244	152913	157553	162164	46
119685	119685	124534	129353	134140	138898	143625	148322	152991	157630	162240	45
119766	9.119766	9.124615	9.129433	9.134220	9.138977	9.143703	9.148401	9.153068	9.157707	9.162317	44
119847	119847	124695	129513	134299	139056	143782	148479	153146	157784	162393	43
119928	119928	124776	129593	134379	139135	143860	148557	153223	157861	162470	42
120009	120009	124856	129673	134458	139214	143939	148635	153301	157938	162546	41
120090	9.120090	9.124937	9.129753	9.134538	9.139293	9.144017	9.148713	9.153378	9.158015	9.162623	40
120171	120171	125017	129833	134617	139372	144096	148791	153456	158092	162700	39
120252	120252	125098	129913	134697	139451	144174	148869	153533	158169	162776	38
120333	120333	125178	129993	134776	139530	144253	148947	153611	158246	162853	37
120414	9.120414	9.125259	9.130073	9.134856	9.139609	9.144331	9.149025	9.153688	9.158323	9.162929	36
120495	120495	125339	130153	134935	139687	144410	149103	153766	158400	163006	35
120576	120576	125420	130233	135015	139766	144488	149180	153843	158477	163082	34
120657	120657	125500	130312	135094	139845	144567	149258	153921	158554	163159	33
120738	9.120738	9.125581	9.130392	9.135174	9.139924	9.144645	9.149336	9.153998	9.158631	9.163235	32
120819	120819	125661	130472	135253	140003	144724	149414	154076	158708	163312	31
120900	120900	125742	130552	135332	140082	144802	149492	154153	158785	163388	30
120981	120981	125822	130632	135412	140161	144880	149570	154231	158862	163465	29
121062	9.121062	9.125903	9.130712	9.135491	9.140240	9.144959	9.149648	9.154308	9.158939	9.163541	28
121143	121143	125983	130792	135571	140319	145037	149726	154385	159016	163618	27
121224	121224	126063	130872	135650	140398	145116	149804	154463	159093	163694	26
121305	121305	126144	130952	135729	140477	145194	149882	154540	159170	163771	25
121386	9.121386	9.126224	9.131031	9.135810	9.140556	9.145272	9.149960	9.154618	9.159247	9.163847	24
121467	121467	126304	131112	135889	140634	145351	150038	154695	159324	163923	23
121547	121547	126385	131191	135967	140713	145429	150115	154772	159401	164000	22
121628	121628	126465	131271	136047	140792	145507	150193	154850	159477	164076	21
121709	9.121709	9.126546	9.131351	9.136126	9.140871	9.145586	9.150271	9.154927	9.159554	9.164153	20
121790	121790	126626	131431	136205	140950	145664	150349	155004	159631	164229	19
121871	121871	126706	131511	136285	141029	145742	150427	155082	159708	164306	18
121952	121952	126787	131591	136364	141107	145821	150505	155159	159785	164382	17
122033	9.122033	9.126867	9.131670	9.136443	9.141186	9.145899	9.150589	9.155237	9.159862	9.164458	16
122113	122113	126947	131750	136522	141265	145977	150660	155314	159939	164535	15
122194	122194	127028	131830	136602	141344	146056	150738	155391	160015	164611	14
122275	122275	127108	131910	136681	141422	146134	150816	155468	160092	164687	13
122356	9.122356	9.127188	9.131990	9.136761	9.141501	9.146212	9.150894	9.155546	9.160169	9.164764	12
122437	122437	127268	132069	136840	141580	146290	150971	155623	160246	164840	11
122517	122517	127349	132149	136919	141659	146369	151049	155700	160323	164916	10
122598	122598	127429	132229	136998	141737	146447	151127	155778	160399	164993	9
122679	9.122679	9.127509	9.132309	9.137077	9.141816	9.146525	9.151205	9.155855	9.160476	9.165069	8
122760	122760	127589	132388	137157	141895	146603	151282	155932	160554	165145	7
122840	122840	127670	132468	137236	141974	146682	151360	156009	160630	165222	6
122921	122921	127750	132548	137315	142052	146760	151438	156087	160707	165299	5
123002	9.123002	9.127830	9.132627	9.137394	9.142131	9.146838	9.151516	9.156164	9.160783	9.165374	4
123083	123083	127910	132707	137473	142210	146916	151593	156241	160860	165450	3
123163	123163	127990	132787	137553	142288	146994	151671	156318	160937	165527	2
123244	123244	128071	132866	137632	142367	147073	151749	156395	161013	165603	1
123325	9.123325	9.128151	9.132946	9.137711	9.142446	9.147151	9.151826	9.156473	9.161090	9.165679	0
9"	9"	8"	7"	6"	5"	4"	3"	2"	1"	0"	

3 Hours.

Log. Haversines. (4)

3 Hours.

	0"	1"	2"	3"	4"	5"	6"	7"	8"	9"	
	45 deg.					46 deg.					
0	0	165679	170240	174773	179278	183756	188207	192631	197028	201399	205745
1	15	165755	170316	174849	179353	183830	188281	192704	197101	201472	205817
2	30	165832	170392	174924	179428	183905	188355	192778	197174	201545	205893
3	45	165908	170467	174993	179503	183979	188429	192851	197247	201617	205961
4	0	165984	170543	175074	179578	184054	188503	192925	197320	201690	206033
5	15	166060	170619	175149	179652	184128	188576	192998	197393	201762	206105
6	30	166137	170695	175225	179727	184202	188650	193072	197466	201835	206178
7	45	166213	170770	175300	179802	184277	188724	193145	197539	201908	206250
8	0	166289	170846	175375	179877	184351	188798	193219	197613	201980	206322
9	15	166365	170922	175450	179952	184425	188872	193292	197686	202053	206395
10	30	166441	170998	175526	180026	184500	188946	193366	197759	202125	206466
11	45	166517	171073	175601	180101	184574	189020	193439	197831	202198	206538
12	0	166593	171149	175676	180176	184648	189094	193512	197905	202270	206610
13	15	166670	171225	175751	180251	184723	189168	193586	197977	202343	206683
14	30	166746	171300	175827	180325	184797	189241	193659	198050	202416	206755
15	45	166822	171376	175902	180400	184871	189315	193733	198123	202488	206827
16	0	166898	171452	175977	180475	184946	189389	193806	198196	202561	206899
17	15	166974	171527	176052	180550	185020	189463	193879	198269	202633	206971
18	30	167051	171603	176127	180624	185094	189537	193953	198342	202706	207043
19	45	167127	171678	176203	180699	185168	189611	194026	198415	202778	207115
20	0	167203	171754	176278	180774	185243	189684	194100	198488	202851	207187
21	15	167279	171830	176353	180848	185317	189758	194173	198561	202923	207259
22	30	167355	171905	176428	180923	185391	189832	194246	198634	202996	207331
23	45	167431	171981	176503	180998	185465	189906	194319	198707	203068	207403
24	0	167507	172057	176578	181073	185540	189980	194393	198780	203141	207475
25	15	167583	172132	176653	181147	185614	190053	194466	198853	203213	207547
26	30	167659	172208	176729	181222	185688	190127	194540	198926	203285	207619
27	45	167735	172283	176804	181297	185762	190201	194613	198998	203358	207691
28	0	167811	172359	176879	181371	185836	190275	194686	199071	203430	207763
29	15	167887	172434	176954	181446	185911	190348	194759	199144	203503	207835
30	30	167963	172510	177029	181521	185985	190422	194833	199217	203575	207907
31	45	168039	172586	177104	181595	186059	190496	194906	199290	203648	207979
32	0	168115	172661	177179	181670	186133	190570	194979	199363	203720	208051
33	15	168191	172737	177254	181744	186207	190643	195053	199436	203792	208123
34	30	168267	172812	177329	181819	186281	190717	195126	199508	203865	208195
35	45	168343	172888	177404	181894	186356	190791	195199	199581	203937	208267
36	0	168419	172963	177479	181968	186430	190864	195272	199654	204010	208339
37	15	168495	173039	177554	182043	186504	190938	195346	199727	204082	208411
38	30	168571	173114	177629	182117	186578	191012	195419	199800	204154	208483
39	45	168647	173190	177704	182192	186652	191085	195492	199872	204227	208555
40	0	168723	173265	177779	182266	186726	191159	195565	199945	204299	208627
41	15	168799	173341	177854	182341	186800	191233	195638	200018	204371	208699
42	30	168875	173416	177929	182416	186874	191306	195712	200091	204444	208771
43	45	168951	173491	178004	182490	186948	191380	195785	200163	204516	208843
44	0	169027	173567	178079	182565	187023	191454	195858	200236	204588	208915
45	15	169102	173642	178154	182639	187097	191527	195931	200309	204661	208987
46	30	169178	173718	178229	182714	187171	191601	196004	200382	204733	209059
47	45	169254	173793	178304	182788	187245	191674	196078	200454	204805	209130
48	0	169330	173869	178379	182863	187319	191748	196151	200527	204878	209202
49	15	169406	173944	178454	182937	187393	191822	196224	200600	204950	209274
50	30	169482	174019	178529	183012	187467	191895	196297	200673	205022	209346
51	45	169558	174095	178604	183086	187541	191969	196370	200745	205094	209418
52	0	169634	174170	178679	183161	187615	192042	196443	200818	205167	209490
53	15	169709	174246	178754	183235	187689	192116	196516	200891	205239	209561
54	30	169785	174321	178829	183309	187763	192190	196589	200963	205311	209633
55	45	169861	174396	178904	183384	187837	192264	196663	201036	205383	209705
56	0	169937	174472	178979	183458	187911	192337	196736	201109	205456	209777
57	15	170013	174547	179054	183533	187985	192410	196809	201181	205528	209849
58	30	170089	174622	179128	183607	188059	192484	196882	201254	205600	209920
59	45	170164	174698	179203	183682	188133	192557	196955	201327	205672	209992
60	0	170240	174773	179278	183756	188207	192631	197028	201399	205745	210064
		59"	58"	57"	56"	55"	54"	53"	52"	51"	50"

20 Hours.

20 Hours.

	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	
	47 deg.			48 deg.			49 deg.				
1	210664	214358	218627	222870	227089	231284	235454	239600	243722	247821	60
15	210136	214429	218697	222941	227159	231353	235523	239669	243791	247889	59
30	210207	214501	218768	223011	227229	231423	235593	239739	243859	247957	58
45	210279	214572	218839	223082	227300	231493	235664	239807	243928	248025	57
60	210351	214643	218910	223152	227370	231562	235731	239876	243996	248093	56
75	210423	214715	218981	223223	227440	231632	235800	239944	244065	248162	55
90	210494	214786	219052	223293	227510	231702	235870	240013	244133	248230	54
105	210566	214857	219123	223364	227580	231771	235939	240082	244202	248298	53
120	210638	214929	219194	223434	227650	231841	236008	240151	244270	248366	52
135	210710	215000	219265	223505	227720	231911	236077	240220	244339	248434	51
150	210781	215071	219336	223575	227790	231980	236147	240289	244407	248502	50
165	210853	215142	219406	223646	227860	232050	236216	240358	244476	248570	49
180	210925	215213	219477	223716	227930	232120	236285	240426	244544	248638	48
195	210996	215285	219548	223786	228000	232189	236354	240495	244612	248706	47
210	211068	215356	219619	223857	228070	232259	236423	240564	244681	248774	46
225	211140	215427	219690	223927	228140	232329	236493	240633	244749	248842	45
240	211211	215499	219761	223998	228210	232399	236562	240702	244818	248910	44
255	211283	215570	219831	224068	228280	232468	236631	240770	244886	248978	43
270	211355	215641	219902	224139	228350	232537	236700	240839	244954	249046	42
285	211426	215712	219973	224209	228420	232607	236769	240908	245022	249114	41
300	211498	215784	220044	224279	228490	232676	236838	240977	245091	249182	40
315	211570	215855	220115	224350	228560	232746	236908	241046	245160	249250	39
330	211641	215926	220186	224420	228630	232816	236977	241114	245228	249318	38
345	211713	215997	220256	224490	228700	232885	237046	241183	245296	249386	37
360	211785	216068	220327	224561	228770	232955	237115	241252	245365	249454	36
375	211856	216140	220398	224631	228840	233024	237184	241321	245433	249522	35
390	211928	216211	220469	224702	228910	233094	237254	241389	245501	249590	34
405	211999	216282	220539	224772	228980	233163	237323	241458	245570	249658	33
420	212071	216353	220610	224842	229050	233233	237392	241527	245638	249726	32
435	212143	216424	220681	224912	229120	233302	237461	241595	245706	249794	31
450	212214	216495	220752	224983	229190	233372	237530	241664	245775	249862	30
465	212286	216566	220822	225053	229259	233441	237599	241733	245843	249930	29
480	212357	216638	220893	225123	229329	233511	237668	241802	245911	249998	28
495	212429	216709	220964	225194	229399	233580	237737	241870	245980	250065	27
510	212500	216780	221034	225264	229469	233650	237806	241939	246048	250133	26
525	212572	216851	221105	225334	229539	233719	237875	242008	246116	250201	25
540	212643	216922	221176	225405	229609	233789	237944	242076	246184	250269	24
555	212715	216993	221246	225475	229679	233858	238014	242145	246253	250337	23
570	212786	217064	221317	225545	229749	233928	238083	242214	246321	250405	22
585	212858	217135	221388	225615	229818	233997	238152	242282	246389	250473	21
600	212929	217206	221459	225686	229888	234067	238221	242351	246457	250541	20
615	213001	217277	221529	225756	229958	234136	238290	242420	246526	250609	19
630	213073	217349	221600	225826	230028	234205	238359	242489	246594	250676	18
645	213144	217420	221670	225896	230098	234275	238428	242557	246662	250744	17
660	213215	217491	221741	225967	230168	234344	238497	242625	246730	250812	16
675	213287	217562	221812	226037	230237	234414	238566	242694	246799	250880	15
690	213358	217633	221882	226107	230307	234483	238635	242763	246867	250948	14
705	213430	217704	221953	226177	230377	234552	238704	242831	246935	251015	13
720	213501	217775	222024	226247	230447	234622	238773	242900	247003	251083	12
735	213573	217846	222094	226318	230517	234691	238842	242968	247071	251151	11
750	213644	217917	222165	226388	230586	234761	238911	243037	247140	251219	10
765	213715	217988	222235	226458	230656	234830	238980	243106	247208	251287	9
780	213787	218059	222306	226528	230726	234899	239049	243174	247276	251354	8
795	213858	218130	222376	226598	230796	234969	239118	243243	247344	251422	7
810	213930	218201	222447	226668	230865	235038	239187	243311	247412	251490	6
825	214001	218272	222518	226739	230935	235107	239255	243380	247480	251558	5
840	214072	218343	222588	226809	231005	235177	239324	243448	247549	251626	4
855	214144	218414	222659	226879	231075	235246	239393	243517	247617	251693	3
870	214215	218485	222729	226949	231144	235315	239462	243585	247685	251761	2
885	214286	218556	222800	227019	231214	235385	239531	243653	247753	251829	1
900	214358	218627	222870	227089	231284	235454	239600	243722	247821	251897	0
	49"	48"	47"	46"	45"	44"	43"	42"	41"	40"	

		20"	21"	22"	23"	24"	25"	26"	27"	28"																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
		50 deg.					51 deg.					52 deg.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
0	0	9.251497	9.251919	9.251978	9.251983	9.251983	9.251983	9.251983	9.251983	9.251983	0 <th>0</th> <td>9.257969</td> <td>9.257930</td> <td>9.257870</td> <td>9.257789</td> <td>9.257684</td> <td>9.257553</td> <td>9.257397</td> <td>9.257218</td> <td>9.256997</td> <td>9.256732</td> <td>9.256378</td> <td>9.255930</td> <td>9.255384</td> <td>9.254744</td> <td>9.254014</td> <td>9.253190</td> <td>9.252277</td> <td>9.251277</td> <td>9.250190</td> <td>9.249014</td> <td>9.247749</td> <td>9.246395</td> <td>9.244951</td> <td>9.243417</td> <td>9.241794</td> <td>9.240081</td> <td>9.238378</td> <td>9.236584</td> <td>9.234700</td> <td>9.232727</td> <td>9.230664</td> <td>9.228511</td> <td>9.226268</td> <td>9.223935</td> <td>9.221512</td> <td>9.218999</td> <td>9.216396</td> <td>9.213703</td> <td>9.210920</td> <td>9.208047</td> <td>9.205084</td> <td>9.202031</td> <td>9.198888</td> <td>9.195655</td> <td>9.192332</td> <td>9.188919</td> <td>9.185416</td> <td>9.181823</td> <td>9.178140</td> <td>9.174367</td> <td>9.170504</td> <td>9.166551</td> <td>9.162508</td> <td>9.158375</td> <td>9.154152</td> <td>9.149839</td> <td>9.145436</td> <td>9.140943</td> <td>9.136360</td> <td>9.131687</td> <td>9.126924</td> <td>9.122071</td> <td>9.117128</td> <td>9.112095</td> <td>9.106972</td> <td>9.101759</td> <td>9.096456</td> <td>9.091063</td> <td>9.085580</td> <td>9.080007</td> <td>9.074344</td> <td>9.068591</td> <td>9.062748</td> <td>9.056815</td> <td>9.050792</td> <td>9.044679</td> <td>9.038476</td> <td>9.032183</td> <td>9.025799</td> <td>9.019326</td> <td>9.012763</td> <td>9.006120</td> <td>9.000397</td> <td>8.994594</td> <td>8.988711</td> <td>8.982748</td> <td>8.976705</td> <td>8.970582</td> <td>8.964379</td> <td>8.958096</td> <td>8.951733</td> <td>8.945289</td> <td>8.938766</td> <td>8.932163</td> <td>8.925480</td> <td>8.918717</td> <td>8.911874</td> <td>8.904951</td> <td>8.897948</td> <td>8.890865</td> <td>8.883692</td> <td>8.876439</td> <td>8.869106</td> <td>8.861693</td> <td>8.854200</td> <td>8.846627</td> <td>8.838974</td> <td>8.831241</td> <td>8.823428</td> <td>8.815535</td> <td>8.807562</td> <td>8.799509</td> <td>8.791376</td> <td>8.783163</td> <td>8.774870</td> <td>8.766497</td> <td>8.758044</td> <td>8.749511</td> <td>8.740898</td> <td>8.732205</td> <td>8.723432</td> <td>8.714579</td> <td>8.705646</td> <td>8.696633</td> <td>8.687540</td> <td>8.678367</td> <td>8.669114</td> <td>8.659781</td> <td>8.650368</td> <td>8.640875</td> <td>8.631302</td> <td>8.621649</td> <td>8.611916</td> <td>8.602103</td> <td>8.592210</td> <td>8.582237</td> <td>8.572184</td> <td>8.562051</td> <td>8.551838</td> <td>8.541545</td> <td>8.531172</td> <td>8.520719</td> <td>8.510186</td> <td>8.500573</td> <td>8.490880</td> <td>8.481107</td> <td>8.471254</td> <td>8.461321</td> <td>8.451308</td> <td>8.441215</td> <td>8.431042</td> <td>8.420789</td> <td>8.410456</td> <td>8.400043</td> <td>8.389550</td> <td>8.378977</td> <td>8.368324</td> <td>8.357591</td> <td>8.346778</td> <td>8.335885</td> <td>8.324912</td> <td>8.313859</td> <td>8.302726</td> <td>8.291513</td> <td>8.280220</td> <td>8.268847</td> <td>8.257394</td> <td>8.245861</td> <td>8.234248</td> <td>8.222555</td> <td>8.210782</td> <td>8.198929</td> <td>8.186996</td> <td>8.174983</td> <td>8.162890</td> <td>8.150717</td> <td>8.138464</td> <td>8.126131</td> <td>8.113718</td> <td>8.101225</td> <td>8.088652</td> <td>8.075999</td> <td>8.063266</td> <td>8.050453</td> <td>8.037560</td> <td>8.024587</td> <td>8.011534</td> <td>7.998401</td> <td>7.985188</td> <td>7.971895</td> <td>7.958522</td> <td>7.945069</td> <td>7.931536</td> <td>7.917923</td> <td>7.904230</td> <td>7.890457</td> <td>7.876604</td> <td>7.862671</td> <td>7.848658</td> <td>7.834565</td> <td>7.820392</td> <td>7.806139</td> <td>7.791806</td> <td>7.777293</td> <td>7.762600</td> <td>7.747827</td> <td>7.732974</td> <td>7.718041</td> <td>7.702928</td> <td>7.687735</td> <td>7.672462</td> <td>7.657109</td> <td>7.641676</td> <td>7.626163</td> <td>7.610580</td> <td>7.594927</td> <td>7.579194</td> <td>7.563381</td> <td>7.547488</td> <td>7.531515</td> <td>7.515462</td> <td>7.499329</td> <td>7.483116</td> <td>7.466823</td> <td>7.450460</td> <td>7.434027</td> <td>7.417514</td> <td>7.400921</td> <td>7.384248</td> <td>7.367495</td> <td>7.350662</td> <td>7.333749</td> <td>7.316756</td> <td>7.299683</td> <td>7.282530</td> <td>7.265297</td> <td>7.247984</td> <td>7.230591</td> <td>7.213118</td> <td>7.195565</td> <td>7.177932</td> <td>7.160219</td> <td>7.142426</td> <td>7.124553</td> <td>7.106600</td> <td>7.088567</td> <td>7.070454</td> <td>7.052261</td> <td>7.033988</td> <td>7.015635</td> <td>6.997192</td> <td>6.978659</td> <td>6.959936</td> <td>6.941123</td> <td>6.922220</td> <td>6.903227</td> <td>6.884144</td> <td>6.864971</td> <td>6.845708</td> <td>6.826355</td> <td>6.806912</td> <td>6.787279</td> <td>6.767556</td> <td>6.747743</td> <td>6.727840</td> <td>6.707847</td> <td>6.687764</td> <td>6.667591</td> <td>6.647328</td> <td>6.626975</td> <td>6.606532</td> <td>6.585999</td> <td>6.565376</td> <td>6.544663</td> <td>6.523860</td> <td>6.502967</td> <td>6.481984</td> <td>6.460911</td> <td>6.439748</td> <td>6.418495</td> <td>6.397152</td> <td>6.375719</td> <td>6.354196</td> <td>6.332583</td> <td>6.310880</td> <td>6.289087</td> <td>6.267204</td> <td>6.245231</td> <td>6.223168</td> <td>6.201015</td> <td>6.178772</td> <td>6.156439</td> <td>6.133916</td> <td>6.111303</td> <td>6.088600</td> <td>6.065807</td> <td>6.042924</td> <td>6.019951</td> <td>5.996888</td> <td>5.973735</td> <td>5.950492</td> <td>5.927159</td> <td>5.903736</td> <td>5.880223</td> <td>5.856620</td> <td>5.832927</td> <td>5.809144</td> <td>5.785271</td> <td>5.761308</td> <td>5.737255</td> <td>5.713112</td> <td>5.688879</td> <td>5.664556</td> <td>5.640143</td> <td>5.615640</td> <td>5.591047</td> <td>5.566364</td> <td>5.541591</td> <td>5.516728</td> <td>5.491775</td> <td>5.466732</td> <td>5.441599</td> <td>5.416376</td> <td>5.391063</td> <td>5.365660</td> <td>5.340167</td> <td>5.314584</td> <td>5.288911</td> <td>5.263148</td> <td>5.237295</td> <td>5.211352</td> <td>5.185319</td> <td>5.159196</td> <td>5.132983</td> <td>5.106680</td> <td>5.080287</td> <td>5.053804</td> <td>5.027231</td> <td>5.000568</td> <td>4.973815</td> <td>4.946972</td> <td>4.920039</td> <td>4.893016</td> <td>4.865903</td> <td>4.838700</td> <td>4.811407</td> <td>4.784024</td> <td>4.756551</td> <td>4.728988</td> <td>4.701335</td> <td>4.673592</td> <td>4.645759</td> <td>4.617836</td> <td>4.589823</td> <td>4.561720</td> <td>4.533527</td> <td>4.505244</td> <td>4.476871</td> <td>4.448408</td> <td>4.419855</td> <td>4.391212</td> <td>4.362479</td> <td>4.333656</td> <td>4.304743</td> <td>4.275740</td> <td>4.246647</td> <td>4.217464</td> <td>4.188191</td> <td>4.158828</td> <td>4.129375</td> <td>4.100832</td> <td>4.071199</td> <td>4.041476</td> <td>4.011663</td> <td>3.981760</td> <td>3.951767</td> <td>3.921684</td> <td>3.891511</td> <td>3.861248</td> <td>3.830895</td> <td>3.800452</td> <td>3.769919</td> <td>3.739296</td> <td>3.708583</td> <td>3.677780</td> <td>3.646887</td> <td>3.615904</td> <td>3.584831</td> <td>3.553668</td> <td>3.522415</td> <td>3.491072</td> <td>3.459639</td> <td>3.428116</td> <td>3.396503</td> <td>3.364800</td> <td>3.333007</td> <td>3.301124</td> <td>3.269151</td> <td>3.237088</td> <td>3.204935</td> <td>3.172692</td> <td>3.140359</td> <td>3.107936</td> <td>3.075423</td> <td>3.042820</td> <td>3.010127</td> <td>2.977344</td> <td>2.944471</td> <td>2.911518</td> <td>2.878485</td> <td>2.845372</td> <td>2.812179</td> <td>2.778906</td> <td>2.745553</td> <td>2.712120</td> <td>2.678607</td> <td>2.645014</td> <td>2.611341</td> <td>2.577588</td> <td>2.543755</td> <td>2.509842</td> <td>2.475849</td> <td>2.441776</td> <td>2.407623</td> <td>2.373390</td> <td>2.339077</td> <td>2.304684</td> <td>2.270211</td> <td>2.235658</td> <td>2.201025</td> <td>2.166312</td> <td>2.131519</td> <td>2.096646</td> <td>2.061693</td> <td>2.026660</td> <td>1.991557</td> <td>1.956374</td> <td>1.921111</td> <td>1.885768</td> <td>1.850345</td> <td>1.814842</td> <td>1.779259</td> <td>1.743596</td> <td>1.707853</td> <td>1.672030</td> <td>1.636127</td> <td>1.600144</td> <td>1.564081</td> <td>1.527938</td> <td>1.491715</td> <td>1.455412</td> <td>1.419029</td> <td>1.382566</td> <td>1.346023</td> <td>1.309400</td> <td>1.272697</td> <td>1.235914</td> <td>1.199051</td> <td>1.162108</td> <td>1.125085</td> <td>1.087982</td> <td>1.050799</td> <td>1.013536</td> <td>0.976193</td> <td>0.938770</td> <td>0.901267</td> <td>0.863684</td> <td>0.826021</td> <td>0.788278</td> <td>0.750455</td> <td>0.712552</td> <td>0.674569</td> <td>0.636506</td> <td>0.598363</td> <td>0.560140</td> <td>0.521837</td> <td>0.483454</td> <td>0.444991</td> <td>0.406448</td> <td>0.367825</td> <td>0.329122</td> <td>0.290339</td> <td>0.251476</td> <td>0.212533</td> <td>0.173510</td> <td>0.134407</td> <td>0.095224</td> <td>0.055961</td> <td>0.016618</td> <td>-0.022805</td> <td>-0.063088</td> <td>-0.103231</td> <td>-0.143234</td> <td>-0.183097</td> <td>-0.222820</td> <td>-0.262403</td> <td>-0.301846</td> <td>-0.341149</td> <td>-0.380312</td> <td>-0.419335</td> <td>-0.458218</td> <td>-0.496961</td> <td>-0.535564</td> <td>-0.574027</td> <td>-0.612350</td> <td>-0.650533</td> <td>-0.688576</td> <td>-0.726479</td> <td>-0.764242</td> <td>-0.801865</td> <td>-0.839348</td> <td>-0.876691</td> <td>-0.913894</td> <td>-0.950957</td> <td>-0.987880</td> <td>-1.024663</td> <td>-1.061306</td> <td>-1.097809</td> <td>-1.134172</td> <td>-1.170395</td> <td>-1.206478</td> <td>-1.242421</td> <td>-1.278234</td> <td>-1.313917</td> <td>-1.349470</td> <td>-1.384893</td> <td>-1.420186</td> <td>-1.455349</td> <td>-1.490382</td> <td>-1.525285</td> <td>-1.560058</td> <td>-1.594691</td> <td>-1.629184</td> <td>-1.663537</td> <td>-1.697750</td> <td>-1.731823</td> <td>-1.765756</td> <td>-1.799549</td> <td>-1.833202</td> <td>-1.866715</td> <td>-1.900088</td> <td>-1.933321</td> <td>-1.966424</td> <td>-1.999397</td> <td>-2.032230</td> <td>-2.064923</td> <td>-2.097476</td> <td>-2.129889</td> <td>-2.162162</td> <td>-2.194295</td> <td>-2.226288</td> <td>-2.258141</td> <td>-2.289854</td> <td>-2.321427</td> <td>-2.352860</td> <td>-2.384153</td> <td>-2.415306</td> <td>-2.446319</td> <td>-2.477192</td> <td>-2.507925</td> <td>-2.538518</td> <td>-2.568971</td> <td>-2.599284</td> <td>-2.629457</td> <td>-2.659490</td> <td>-2.689383</td> <td>-2.719136</td> <td>-2.748749</td> <td>-2.778222</td> <td>-2.807555</td> <td>-2.836748</td> <td>-2.865791</td> <td>-2.894794</td> <td>-2.923657</td> <td>-2.952380</td> <td>-2.980963</td> <td>-3.009406</td> <td>-3.037709</td> <td>-3.065872</td> <td>-3.093895</td> <td>-3.121778</td> <td>-3.149521</td> <td>-3.177124</td> <td>-3.204587</td> <td>-3.231910</td> <td>-3.259093</td> <td>-3.286136</td> <td>-3.313039</td> <td>-3.339802</td> <td>-3.366425</td> <td>-3.392908</td> <td>-3.419251</td> <td>-3.445454</td> <td>-3.471517</td> <td>-3.497440</td> <td>-3.523223</td> <td>-3.548866</td> <td>-3.574369</td> <td>-3.600732</td> <td>-3.626955</td> <td>-3.653038</td> <td>-3.678981</td> <td>-3.704784</td> <td>-3.730447</td> <td>-3.755970</td> <td>-3.781353</td> <td>-3.806596</td> <td>-3.831699</td> <td>-3.856662</td> <td>-3.881485</td> <td>-3.906168</td> <td>-3.930711</td> <td>-3.955114</td> <td>-3.979377</td> <td>-4.003500</td> <td>-4.027483</td> <td>-4.051326</td> <td>-4.075029</td> <td>-4.098592</td> <td>-4.122015</td> <td>-4.145298</td> <td>-4.168441</td> <td>-4.191444</td> <td>-4.214307</td> <td>-4.237030</td> <td>-4.259613</td> <td>-4.282056</td> <td>-4.304359</td> <td>-4.326522</td> <td>-4.348545</td> <td>-4.370428</td> <td>-4.392171</td> <td>-4.413774</td> <td>-4.435237</td> <td>-4.456560</td> <td>-4.477743</td> <td>-4.498786</td> <td>-4.519689</td> <td>-4.540452</td> <td>-4.561075</td> <td>-4.581558</td> <td>-4.601891</td> <td>-4.622084</td> <td>-4.642137</td> <td>-4.662050</td> <td>-4.681823</td> <td>-4.701456</td> <td>-4.720949</td> <td>-4.740302</td> <td>-4.759515</td> <td>-4.778588</td> <td>-4.797521</td> <td>-4.816314</td> <td>-4.834967</td> <td>-4.853480</td> <td>-4.871853</td> <td>-4.890086</td> <td>-4.908179</td> <td>-4.926132</td> <td>-4.943945</td> <td>-4.961618</td> <td>-4.979151</td> <td>-4.996544</td> <td>-5.013797</td> <td>-5.030910</td> <td>-5.047883</td> <td>-5.064716</td> <td>-5.081409</td> <td>-5.097962</td> <td>-5.114375</td> <td>-5.130648</td> <td>-5.146781</td> <td>-5.162774</td> <td>-5.178627</td> <td>-5.194340</td> <td>-5.209913</td> <td>-5.225346</td> <td>-5.240639</td> <td>-5.255792</td> <td>-5.270905</td> <td>-5.285878</td> <td>-5.300711</td> <td>-5.315404</td> <td>-5.329957</td> <td>-5.344370</td> <td>-5.358643</td> <td>-5.372776</td> <td>-5.386769</td> <td>-5.400622</td> <td>-5.414335</td> <td>-5.427908</td> <td>-5.441341</td> <td>-5.454634</td> <td>-5.467787</td> <td>-5.480800</td> <td>-5.493673</td> <td>-5.506406</td> <td>-5.518999</td> <td>-5.531452</td> <td>-5.543765</td> <td>-5.555938</td> <td>-5.567971</td> <td>-5.579864</td> <td>-5.591617</td> <td>-5.603230</td> <td>-5.614703</td> <td>-5.626036</td> <td>-5.637229</td> <td>-5.648282</td> <td>-5.659195</td> <td>-5.669968</td> <td>-5.680591</td> <td>-5.691064</td> <td>-5.701387</td> <td>-5.711560</td> <td>-5.721593</td> <td>-5.731486</td> <td>-5.741239</td> <td>-5.750852</td> <td>-5.760325</td> <td>-5.769658</td> <td>-5.778841</td> <td>-5.787884</td> <td>-5.796787</td> <td>-5.805550</td> <td>-5.814173</td> <td>-5.822656</td> <td>-5.831099</td> <td>-5.839402</td> <td>-5.847565</td> <td>-5.855588</td> <td>-5.863471</td> <td>-5.871214</td> <td>-5.878817</td> <td>-5.886280</td> <td>-5.893603</td> <td>-5.900786</td> <td>-5.907829</td> <td>-5.914732</td> <td>-5.921495</td> <td>-5.928118</td> <td>-5.934591</td> <td>-5.940924</td> <td>-5.947117</td> <td>-5.953170</td> <td>-5.959083</td> <td>-5.964846</td> <td>-5.970469</td> <td>-5.975952</td> <td>-5.981295</td> <td>-5.986498</td> <td>-5.991561</td> <td>-5.996484</td> <td>-6.001267</td> <td>-6.005910</td> <td>-6.010413</td> <td>-6.014776</td> <td>-6.018999</td> <td>-6.023082</td> <td>-6.027025</td> <td>-6.030828</td> <td>-6.034491</td> <td>-6.038014</td> <td>-6.041397</td> <td>-6.044640</td> <td>-6.047753</td> <td>-6.050726</td> <td>-6.053559</td> <td>-6.056252</td> <td>-6.058805</td> <td>-6.061218</td> <td>-6.063491</td> <td>-6.065624</td> <td>-6.067617</td> <td>-6.069470</td> <td>-6.071183</td> <td>-6.072746</td> <td>-6.074169</td> <td>-6.075452</td> <td>-6.076595</td> <td>-6.077598</td> <td>-6.078461</td> <td>-6.079184</td> <td>-6.079767</td> <td>-6.080210</td> <td>-6.080523</td> <td>-6.080706</td> <td>-6.080759</td> <td>-6.080682</td> <td>-6.080475</td> <td>-6.080138</td> <td>-6.079671</td> <td>-6.079074</td> <td>-6.078347</td> <td>-6.077490</td> <td>-6.076513</td> <td>-6.075416</td> <td>-6.074199</td> <td>-6.072862</td> <td>-6.071405</td> <td>-6.069828</td> <td>-6.068131</td> <td>-6.066314</td> <td>-6.064377</td> <td>-6.062320</td> <td>-6.060153</td> <td>-6.057876</td> <td>-6.055489</td> <td>-6.052992</td> <td>-6.050385</td> <td>-6.047668</td> <td>-6.044841</td> <td>-6.041904</td> <td>-6.038857</td> <td>-6.035690</td> <td>-6.032413</td> <td>-6.029026</td> <td>-6.025529</td> <td>-6.021922</td> <td>-6.018205</td> <td>-6.014378</td> <td>-6.010441</td> <td>-6.006394</td> <td>-6.002237</td> <td>-5.997970</td> <td>-5.993503</td> <td>-5.988936</td> <td>-5.984269</td> <td>-5.979502</td> <td>-5.974635</td> <td>-5.969668</td> <td>-5.964601</td> <td>-5.959434</td> <td>-5.954167</td> <td>-5.948800</td> <td>-5.943333</td> <td>-5.937766</td> <td>-5.932099</td> <td>-5.926332</td> <td>-5.920465</td> <td>-5.914498</td> <td>-5.908431</td> <td>-5.902264</td> <td>-5.895997</td> <td>-5.889630</td> <td>-5.883163</td> <td>-5.876696</td> <td>-5.870129</td> <td>-5.863462</td> <td>-5.856695</td> <td>-5.849828</td> <td>-5.842861</td> <td>-5.835794</td> <td>-5.828627</td> <td>-5.821360</td> <td>-5.8</td>	0	9.257969	9.257930	9.257870	9.257789	9.257684	9.257553	9.257397	9.257218	9.256997	9.256732	9.256378	9.255930	9.255384	9.254744	9.254014	9.253190	9.252277	9.251277	9.250190	9.249014	9.247749	9.246395	9.244951	9.243417	9.241794	9.240081	9.238378	9.236584	9.234700	9.232727	9.230664	9.228511	9.226268	9.223935	9.221512	9.218999	9.216396	9.213703	9.210920	9.208047	9.205084	9.202031	9.198888	9.195655	9.192332	9.188919	9.185416	9.181823	9.178140	9.174367	9.170504	9.166551	9.162508	9.158375	9.154152	9.149839	9.145436	9.140943	9.136360	9.131687	9.126924	9.122071	9.117128	9.112095	9.106972	9.101759	9.096456	9.091063	9.085580	9.080007	9.074344	9.068591	9.062748	9.056815	9.050792	9.044679	9.038476	9.032183	9.025799	9.019326	9.012763	9.006120	9.000397	8.994594	8.988711	8.982748	8.976705	8.970582	8.964379	8.958096	8.951733	8.945289	8.938766	8.932163	8.925480	8.918717	8.911874	8.904951	8.897948	8.890865	8.883692	8.876439	8.869106	8.861693	8.854200	8.846627	8.838974	8.831241	8.823428	8.815535	8.807562	8.799509	8.791376	8.783163	8.774870	8.766497	8.758044	8.749511	8.740898	8.732205	8.723432	8.714579	8.705646	8.696633	8.687540	8.678367	8.669114	8.659781	8.650368	8.640875	8.631302	8.621649	8.611916	8.602103	8.592210	8.582237	8.572184	8.562051	8.551838	8.541545	8.531172	8.520719	8.510186	8.500573	8.490880	8.481107	8.471254	8.461321	8.451308	8.441215	8.431042	8.420789	8.410456	8.400043	8.389550	8.378977	8.368324	8.357591	8.346778	8.335885	8.324912	8.313859	8.302726	8.291513	8.280220	8.268847	8.257394	8.245861	8.234248	8.222555	8.210782	8.198929	8.186996	8.174983	8.162890	8.150717	8.138464	8.126131	8.113718	8.101225	8.088652	8.075999	8.063266	8.050453	8.037560	8.024587	8.011534	7.998401	7.985188	7.971895	7.958522	7.945069	7.931536	7.917923	7.904230	7.890457	7.876604	7.862671	7.848658	7.834565	7.820392	7.806139	7.791806	7.777293	7.762600	7.747827	7.732974	7.718041	7.702928	7.687735	7.672462	7.657109	7.641676	7.626163	7.610580	7.594927	7.579194	7.563381	7.547488	7.531515	7.515462	7.499329	7.483116	7.466823	7.450460	7.434027	7.417514	7.400921	7.384248	7.367495	7.350662	7.333749	7.316756	7.299683	7.282530	7.265297	7.247984	7.230591	7.213118	7.195565	7.177932	7.160219	7.142426	7.124553	7.106600	7.088567	7.070454	7.052261	7.033988	7.015635	6.997192	6.978659	6.959936	6.941123	6.922220	6.903227	6.884144	6.864971	6.845708	6.826355	6.806912	6.787279	6.767556	6.747743	6.727840	6.707847	6.687764	6.667591	6.647328	6.626975	6.606532	6.585999	6.565376	6.544663	6.523860	6.502967	6.481984	6.460911	6.439748	6.418495	6.397152	6.375719	6.354196	6.332583	6.310880	6.289087	6.267204	6.245231	6.223168	6.201015	6.178772	6.156439	6.133916	6.111303	6.088600	6.065807	6.042924	6.019951	5.996888	5.973735	5.950492	5.927159	5.903736	5.880223	5.856620	5.832927	5.809144	5.785271	5.761308	5.737255	5.713112	5.688879	5.664556	5.640143	5.615640	5.591047	5.566364	5.541591	5.516728	5.491775	5.466732	5.441599	5.416376	5.391063	5.365660	5.340167	5.314584	5.288911	5.263148	5.237295	5.211352	5.185319	5.159196	5.132983	5.106680	5.080287	5.053804	5.027231	5.000568	4.973815	4.946972	4.920039	4.893016	4.865903	4.838700	4.811407	4.784024	4.756551	4.728988	4.701335	4.673592	4.645759	4.617836	4.589823	4.561720	4.533527	4.505244	4.476871	4.448408	4.419855	4.391212	4.362479	4.333656	4.304743	4.275740	4.246647	4.217464	4.188191	4.158828	4.129375	4.100832	4.071199	4.041476	4.011663	3.981760	3.951767	3.921684	3.891511	3.861248	3.830895	3.800452	3.769919	3.739296	3.708583	3.677780	3.646887	3.615904	3.584831	3.553668	3.522415	3.491072	3.459639	3.428116	3.396503	3.364800	3.333007	3.301124	3.269151	3.237088	3.204935	3.172692	3.140359	3.107936	3.075423	3.042820	3.010127	2.977344	2.944471	2.911518	2.878485	2.845372	2.812179	2.778906	2.745553	2.712120	2.678607	2.645014	2.611341	2.577588	2.543755	2.509842	2.475849	2.441776	2.407623	2.373390	2.339077	2.304684	2.270211	2.235658	2.201025	2.166312	2.131519	2.096646	2.061693	2.026660	1.991557	1.956374	1.921111	1.885768	1.850345	1.814842	1.779259	1.743596	1.707853	1.672030	1.636127	1.600144	1.564081	1.527938	1.491715	1.455412	1.419029	1.382566	1.346023	1.309400	1.272697	1.235914	1.199051	1.162108	1.125085	1.087982	1.050799	1.013536	0.976193	0.938770	0.901267	0.863684	0.826021	0.788278	0.750455	0.712552	0.674569	0.636506	0.598363	0.560140	0.521837	0.483454	0.444991	0.406448	0.367825	0.329122	0.290339	0.251476	0.212533	0.173510	0.134407	0.095224	0.055961	0.016618	-0.022805	-0.063088	-0.103231	-0.143234	-0.183097	-0.222820	-0.262403	-0.301846	-0.341149	-0.380312	-0.419335	-0.458218	-0.496961	-0.535564	-0.574027	-0.612350	-0.650533	-0.688576	-0.726479	-0.764242	-0.801865	-0.839348	-0.876691	-0.913894	-0.950957	-0.987880	-1.024663	-1.061306	-1.097809	-1.134172	-1.170395	-1.206478	-1.242421	-1.278234	-1.313917	-1.349470	-1.384893	-1.420186	-1.455349	-1.490382	-1.525285	-1.560058	-1.594691	-1.629184	-1.663537	-1.697750	-1.731823	-1.765756	-1.799549	-1.833202	-1.866715	-1.900088	-1.933321	-1.966424	-1.999397	-2.032230	-2.064923	-2.097476	-2.129889	-2.162162	-2.194295	-2.226288	-2.258141	-2.289854	-2.321427	-2.352860	-2.384153	-2.415306	-2.446319	-2.477192	-2.507925	-2.538518	-2.568971	-2.599284	-2.629457	-2.659490	-2.689383	-2.719136	-2.748749	-2.778222	-2.807555	-2.836748	-2.865791	-2.894794	-2.923657	-2.952380	-2.980963	-3.009406	-3.037709	-3.065872	-3.093895	-3.121778	-3.149521	-3.177124	-3.204587	-3.231910	-3.259093	-3.286136	-3.313039	-3.339802	-3.366425	-3.392908	-3.419251	-3.445454	-3.471517	-3.497440	-3.523223	-3.548866	-3.574369	-3.600732	-3.626955	-3.653038	-3.678981	-3.704784	-3.730447	-3.755970	-3.781353	-3.806596	-3.831699	-3.856662	-3.881485	-3.906168	-3.930711	-3.955114	-3.979377	-4.003500	-4.027483	-4.051326	-4.075029	-4.098592	-4.122015	-4.145298	-4.168441	-4.191444	-4.214307	-4.237030	-4.259613	-4.282056	-4.304359	-4.326522	-4.348545	-4.370428	-4.392171	-4.413774	-4.435237	-4.456560	-4.477743	-4.498786	-4.519689	-4.540452	-4.561075	-4.581558	-4.601891	-4.622084	-4.642137	-4.662050	-4.681823	-4.701456	-4.720949	-4.740302	-4.759515	-4.778588	-4.797521	-4.816314	-4.834967	-4.853480	-4.871853	-4.890086	-4.908179	-4.926132	-4.943945	-4.961618	-4.979151	-4.996544	-5.013797	-5.030910	-5.047883	-5.064716	-5.081409	-5.097962	-5.114375	-5.130648	-5.146781	-5.162774	-5.178627	-5.194340	-5.209913	-5.225346	-5.240639	-5.255792	-5.270905	-5.285878	-5.300711	-5.315404	-5.329957	-5.344370	-5.358643	-5.372776	-5.386769	-5.400622	-5.414335	-5.427908	-5.441341	-5.454634	-5.467787	-5.480800	-5.493673	-5.506406	-5.518999	-5.531452	-5.543765	-5.555938	-5.567971	-5.579864	-5.591617	-5.603230	-5.614703	-5.626036	-5.637229	-5.648282	-5.659195	-5.669968	-5.680591	-5.691064	-5.701387	-5.711560	-5.721593	-5.731486	-5.741239	-5.750852	-5.760325	-5.769658	-5.778841	-5.787884	-5.796787	-5.805550	-5.814173	-5.822656	-5.831099	-5.839402	-5.847565	-5.855588	-5.863471	-5.871214	-5.878817	-5.886280	-5.893603	-5.900786	-5.907829	-5.914732	-5.921495	-5.928118	-5.934591	-5.940924	-5.947117	-5.953170	-5.959083	-5.964846	-5.970469	-5.975952	-5.981295	-5.986498	-5.991561	-5.996484	-6.001267	-6.005910	-6.010413	-6.014776	-6.018999	-6.023082	-6.027025	-6.030828	-6.034491	-6.038014	-6.041397	-6.044640	-6.047753	-6.050726	-6.053559	-6.056252	-6.058805	-6.061218	-6.063491	-6.065624	-6.067617	-6.069470	-6.071183	-6.072746	-6.074169	-6.075452	-6.076595	-6.077598	-6.078461	-6.079184	-6.079767	-6.080210	-6.080523	-6.080706	-6.080759	-6.080682	-6.080475	-6.080138	-6.079671	-6.079074	-6.078347	-6.077490	-6.076513	-6.075416	-6.074199	-6.072862	-6.071405	-6.069828	-6.068131	-6.066314	-6.064377	-6.062320	-6.060153	-6.057876	-6.055489	-6.052992	-6.050385	-6.047668	-6.044841	-6.041904	-6.038857	-6.035690	-6.032413	-6.029026	-6.025529	-6.021922	-6.018205	-6.014378	-6.010441	-6.006394	-6.002237	-5.997970	-5.993503	-5.988936	-5.984269	-5.979502	-5.974635	-5.969668	-5.964601	-5.959434	-5.954167	-5.948800	-5.943333	-5.937766	-5.932099	-5.926332	-5.920465	-5.914498	-5.908431	-5.902264	-5.895997	-5.889630	-5.883163	-5.876696	-5.870129	-5.863462	-5.856695	-5.849828	-5.842861	-5.835794	-5.828627	-5.821360	-5.8

30"	31"	32"	33"	34"	35"	36"	37"	38"	39"
52 deg.	53 deg.	54 deg.							
291412	295244	299055	9.302845	9.306615	9.310364	9.314094	9.317803	9.321492	9.325161
291476	295307	299118	302908	306678	310427	314155	317864	321553	325222
291540	295371	299182	302971	306740	310489	314217	317926	321614	325283
291604	295435	299245	303034	306803	310551	314279	317987	321676	325345
291668	295498	299308	303097	306866	310614	314341	318049	321737	325405
291732	295562	299372	303160	306928	310676	314403	318111	321798	325466
291796	295626	299435	303223	306991	310738	314465	318172	321860	325527
291860	295689	299498	303286	307053	310800	314527	318234	321921	325588
291924	295753	299561	303349	307116	310863	314589	318296	321982	325649
291988	295817	299625	303412	307179	310925	314651	318357	322043	325710
292052	295880	299688	303475	307241	310987	314713	318419	322105	325771
292116	295944	299751	303538	307304	311050	314775	318480	322166	325832
292180	296008	299815	303601	307367	311112	314837	318542	322227	325893
292244	296071	299878	303664	307429	311174	314899	318604	322288	325954
292308	296135	299941	303727	307492	311236	314961	318665	322350	326015
292372	296198	300004	303790	307554	311299	315023	318727	322411	326076
292436	296262	300068	303853	307617	311361	315085	318788	322472	326136
292499	296326	300131	303915	307679	311423	315146	318850	322533	326197
292564	296389	300194	303978	307742	311485	315208	318911	322595	326258
292627	296453	300257	304041	307804	311547	315270	318973	322656	326319
292691	296516	300321	304104	307867	311610	315332	319035	322717	326380
292755	296580	300384	304167	307930	311672	315394	319096	322778	326441
292819	296644	300447	304230	307992	311734	315456	319158	322840	326502
292884	296707	300510	304293	308055	311796	315518	319219	322901	326563
292947	296771	300574	304356	308117	311858	315580	319281	322962	326624
293011	296834	300637	304418	308180	311921	315641	319342	323023	326684
293075	296898	300700	304481	308242	311983	315703	319404	323084	326745
293139	296961	300763	304544	308305	312045	315765	319465	323145	326806
293203	297025	300826	304607	308367	312107	315827	319527	323207	326867
293266	297088	300889	304670	308430	312169	315889	319588	323268	326928
293330	297152	300953	304733	308492	312231	315951	319650	323329	326989
293394	297215	301016	304796	308555	312294	316012	319711	323390	327050
293458	297279	301079	304858	308617	312356	316074	319773	323451	327110
293522	297342	301142	304921	308680	312418	316136	319834	323512	327171
293586	297406	301205	304984	308742	312480	316198	319896	323574	327232
293650	297469	301268	305047	308805	312542	316260	319957	323635	327293
293713	297533	301332	305110	308867	312604	316321	320019	323696	327354
293777	297596	301395	305172	308929	312666	316383	320080	323757	327414
293841	297660	301458	305235	308992	312729	316445	320141	323818	327475
293905	297723	301521	305298	309054	312791	316507	320203	323879	327536
293969	297787	301584	305361	309117	312853	316568	320264	323940	327597
294032	297850	301647	305423	309179	312915	316630	320326	324001	327657
294096	297914	301710	305486	309242	312977	316692	320387	324062	327718
294160	297977	301773	305549	309304	313039	316754	320448	324124	327779
294224	298041	301836	305612	309367	313101	316815	320510	324185	327840
294288	298104	301900	305674	309429	313163	316877	320571	324246	327900
294351	298167	301963	305737	309491	313225	316939	320633	324307	327961
294415	298231	302026	305800	309554	313287	317000	320694	324368	328022
294479	298294	302089	305863	309616	313349	317062	320756	324429	328083
294543	298358	302152	305925	309678	313411	317124	320817	324490	328144
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294670	298485	302278	306051	309803	313535	317247	320940	324612	328265
294734	298548	302341	306114	309866	313597	317309	321001	324673	328326
294798	298611	302404	306176	309928	313659	317371	321062	324734	328387
294861	298675	302467	306239	309990	313722	317433	321124	324795	328447
294925	298738	302530	306302	310053	313783	317494	321185	324856	328508
294989	298801	302593	306364	310115	313846	317556	321246	324917	328568
295053	298865	302656	306427	310177	313907	317618	321308	324978	328629
295116	298928	302719	306490	310240	313970	317679	321369	325039	328690
295180	298992	302782	306552	310302	314031	317741	321430	325100	328750
295244	299055	302845	306615	310364	314094	317803	321492	325161	328811

	40"	41"	42"	43"	44"	45"	46"	47"	48"	49"
	55 deg.				56 deg.				57 deg.	
0 0	328911	332442	336053	339645	343219	346773	350309	353827	357326	360804
1 15	328972	332502	336113	339705	343278	346832	350369	353885	357384	360861
2 30	328933	332562	336173	339765	343337	346891	350427	353944	357442	360918
3 45	328993	332623	336233	339824	343397	346950	350485	354002	357500	360974
4 0	329054	332683	336293	339884	343456	347009	350544	354060	357558	361030
5 15	329114	332743	336353	339944	343515	347068	350603	354119	357617	361086
6 30	329175	332804	336413	340003	343575	347126	350662	354177	357675	361142
7 45	329236	332864	336473	340063	343634	347187	350720	354236	357733	361198
8 0	329296	332924	336533	340123	343694	347246	350779	354294	357791	361254
9 15	329357	332985	336593	340182	343753	347305	350838	354353	357849	361310
10 30	329418	333045	336653	340242	343812	347364	350897	354411	357907	361366
11 45	329478	333105	336713	340302	343872	347423	350955	354469	357965	361422
12 0	329539	333166	336773	340361	343931	347482	351014	354528	358023	361478
13 15	329599	333226	336833	340421	343990	347541	351073	354586	358081	361534
14 30	329660	333286	336893	340481	344050	347600	351131	354645	358140	361590
15 45	329721	333346	336953	340540	344109	347659	351190	354703	358198	361646
16 0	329781	333407	337013	340600	344168	347718	351249	354762	358256	361702
17 15	329842	333467	337073	340660	344228	347777	351308	354820	358314	361758
18 30	329902	333527	337133	340719	344287	347836	351366	354878	358372	361814
19 45	329963	333587	337193	340779	344346	347895	351425	354937	358430	361870
20 0	330024	333648	337253	340838	344406	347954	351484	354995	358488	361926
21 15	330084	333708	337312	340898	344465	348013	351542	355053	358546	361982
22 30	330145	333768	337372	340958	344524	348072	351601	355111	358604	362038
23 45	330205	333828	337432	341017	344583	348131	351660	355170	358662	362094
24 0	330266	333889	337492	341077	344643	348190	351718	355228	358720	362150
25 15	330326	333949	337552	341136	344702	348249	351777	355287	358778	362206
26 30	330387	334009	337612	341196	344761	348308	351836	355345	358836	362262
27 45	330447	334069	337672	341256	344820	348367	351894	355403	358894	362318
28 0	330508	334129	337732	341315	344880	348426	351953	355462	358953	362374
29 15	330568	334190	337792	341375	344939	348484	352011	355520	359010	362430
30 30	330629	334250	337852	341434	344998	348543	352070	355578	359069	362486
31 45	330689	334310	337911	341494	345057	348602	352129	355637	359127	362542
32 0	330750	334370	337971	341553	345117	348661	352187	355695	359185	362598
33 15	330810	334430	338031	341613	345176	348720	352246	355753	359243	362654
34 30	330871	334490	338091	341672	345235	348779	352305	355812	359301	362710
35 45	330931	334551	338151	341732	345294	348838	352363	355870	359359	362766
36 0	330992	334611	338211	341792	345354	348897	352422	355928	359417	362822
37 15	331052	334671	338270	341851	345413	348956	352480	355987	359475	362878
38 30	331113	334731	338330	341911	345472	349015	352539	356045	359533	362934
39 45	331173	334791	338390	341971	345531	349074	352597	356103	359591	362990
40 0	331234	334851	338450	342030	345590	349133	352656	356161	359649	363046
41 15	331294	334912	338510	342089	345649	349191	352715	356220	359707	363102
42 30	331355	334972	338570	342149	345709	349250	352773	356278	359764	363158
43 45	331415	335032	338629	342208	345768	349309	352832	356336	359822	363214
44 0	331475	335092	338689	342268	345827	349368	352890	356394	359880	363270
45 15	331536	335152	338749	342327	345886	349427	352949	356453	359939	363326
46 30	331596	335212	338809	342386	345945	349486	353007	356511	359996	363382
47 45	331657	335272	338869	342446	346005	349544	353066	356569	360054	363438
48 0	331717	335332	338928	342505	346064	349603	353125	356627	360112	363494
49 15	331778	335392	338988	342565	346123	349662	353183	356686	360170	363550
50 30	331838	335452	339048	342624	346182	349721	353242	356744	360228	363606
51 45	331898	335513	339108	342684	346241	349780	353300	356802	360286	363662
52 0	331959	335573	339167	342743	346300	349839	353359	356860	360344	363718
53 15	332019	335633	339227	342803	346359	349897	353417	356918	360402	363774
54 30	332080	335693	339287	342862	346419	349956	353476	356977	360460	363830
55 45	332140	335753	339347	342922	346478	350015	353534	357035	360517	363886
56 0	332200	335813	339406	342981	346537	350074	353593	357093	360575	363942
57 15	332261	335873	339466	343040	346596	350133	353651	357151	360633	363998
58 30	332321	335933	339526	343100	346655	350192	353710	357209	360691	364054
59 45	332381	335993	339586	343159	346714	350250	353768	357268	360749	364110
60 0	332442	336053	339645	343219	346773	350309	353827	357326	360807	364166
	19"	18"	17"	16"	15"	14"	13"	12"	11"	10"

3 Hours.

Log. Havering. (1)

3 Hours.

50"	51"	52"	53"	54"	55"	56"	57"	58"	59"
57 deg.	58 deg.				59 deg.				
364270	367772	371142	374552	377945	381320	384678	388018	391342	394650
364327	367772	371199	374609	378001	381376	384733	388074	391398	394704
364383	367830	371256	374666	378057	381432	384789	388130	391453	394759
364443	367887	371313	374722	378114	381488	384845	388185	391508	394814
364500	367944	371370	374779	378170	381544	384901	388241	391563	394869
364558	368001	371427	374836	378227	381600	384957	388296	391619	394924
364615	368059	371484	374892	378283	381656	385012	388352	391674	394979
364673	368116	371541	374949	378339	381712	385068	388407	391729	395034
364730	368173	371598	375006	378396	381768	385124	388463	391784	395089
364788	368230	371655	375062	378452	381824	385180	388518	391839	395144
364845	368287	371712	375119	378508	381881	385236	388574	391895	395199
364903	368345	371769	375176	378565	381937	385291	388629	391950	395254
364960	368402	371826	375232	378621	381993	385347	388685	392005	395309
365018	368459	371883	375289	378677	382049	385403	388740	392060	395364
365075	368516	371940	375345	378734	382105	385459	388796	392116	395419
365133	368574	371997	375402	378790	382161	385514	388851	392171	395474
365190	368631	372053	375459	378846	382217	385570	388907	392226	395529
365248	368688	372110	375515	378903	382273	385626	388962	392281	395584
365305	368745	372167	375572	378959	382329	385682	389017	392336	395639
365363	368802	372224	375628	379015	382385	385737	389073	392391	395694
365420	368859	372281	375685	379072	382441	385793	389128	392447	395749
365478	368917	372338	375742	379128	382497	385849	389184	392502	395804
365535	368974	372395	375798	379184	382553	385904	389239	392557	395859
365593	369031	372452	375855	379240	382609	385960	389295	392612	395914
365650	369088	372508	375911	379297	382665	386016	389350	392667	395969
365707	369145	372565	375968	379353	382721	386072	389405	392722	396024
365765	369202	372622	376024	379409	382777	386127	389461	392777	396079
365822	369260	372679	376081	379466	382833	386183	389516	392833	396134
365880	369317	372736	376138	379522	382889	386239	389572	392888	396189
365937	369374	372793	376194	379578	382945	386294	389627	392943	396244
365995	369431	372850	376251	379634	383001	386350	389683	392998	396299
366052	369488	372906	376307	379691	383057	386405	389738	393053	396354
366110	369545	372963	376364	379747	383113	386462	389793	393108	396409
366167	369602	373020	376420	379803	383169	386517	389849	393163	396464
366224	369659	373077	376478	379859	383225	386573	389904	393219	396519
366282	369717	373134	376533	379916	383281	386628	389959	393274	396574
366339	369774	373190	376590	379972	383337	386684	390015	393329	396629
366396	369831	373247	376646	380028	383392	386740	390070	393384	396684
366454	369888	373304	376703	380084	383448	386795	390126	393439	396739
366511	369945	373361	376759	380140	383504	386851	390181	393494	396794
366569	370002	373418	376816	380197	383560	386907	390236	393549	396849
366626	370059	373474	376872	380253	383616	386962	390292	393604	396904
366683	370116	373531	376929	380309	383672	387018	390347	393659	396959
366741	370173	373588	376985	380365	383728	387074	390402	393714	397014
366798	370230	373645	377042	380421	383784	387129	390458	393769	397069
366855	370287	373701	377098	380477	383840	387185	390513	393824	397124
366913	370344	373758	377155	380534	383895	387240	390568	393879	397179
366970	370401	373815	377211	380590	383951	387296	390624	393934	397234
367027	370458	373872	377268	380646	384007	387352	390679	393989	397289
367085	370515	373929	377324	380702	384063	387407	390734	394044	397344
367142	370572	373986	377380	380758	384119	387463	390790	394100	397399
367199	370629	374042	377437	380815	384175	387518	390846	394155	397454
367257	370686	374099	377493	380871	384231	387574	390901	394210	397509
367314	370743	374156	377550	380927	384287	387630	390955	394265	397564
367371	370801	374212	377606	380983	384343	387685	391011	394320	397619
367429	370858	374269	377663	381039	384399	387741	391066	394375	397674
367486	370915	374326	377719	381095	384455	387796	391121	394430	397729
367543	370972	374382	377775	381151	384510	387852	391177	394485	397784
367600	371029	374439	377832	381208	384566	387907	391232	394540	397839
367658	371085	374496	377888	381264	384622	387963	391287	394595	397894
367715	371142	374552	377945	381320	384678	388018	391342	394650	397949

	0"	1"	2"	3"	4"	5"	6"	7"	8"
	60 deg.				61 deg.			62 de	
0	9.397940	9.401214	9.404471	9.407713	9.410938	9.414147	9.417340	9.420517	9.423679
1	15	397995	401268	404526	407767	410991	414200	417393	420570
2	30	398049	401323	404580	407820	411045	414253	417446	420623
3	45	398104	401377	404634	407874	411099	414307	417499	420675
4	0	9.398159	9.401432	9.404688	9.407928	9.411152	9.414360	9.417552	9.420728
5	15	398213	401486	404742	407982	411206	414413	417605	420781
6	30	398268	401540	404796	408036	411259	414467	417658	420834
7	45	398323	401593	404850	408090	411313	414520	417711	420887
8	0	9.398377	9.401649	9.404905	9.408144	9.411367	9.414573	9.417764	9.420940
9	15	398432	401704	404959	408197	411420	414627	417817	420992
10	30	398487	401758	405013	408251	411474	414680	417870	421043
11	45	398541	401812	405067	408305	411527	414733	417923	421098
12	0	9.398596	9.401867	9.405121	9.408359	9.411581	9.414787	9.417977	9.421151
13	15	398651	401921	405175	408413	411634	414840	418030	421203
14	30	398705	401973	405229	408467	411688	414893	418083	421256
15	45	398760	402030	405283	408520	411741	414946	418136	421309
16	0	9.398815	9.402084	9.405337	9.408574	9.411795	9.415000	9.418189	9.421362
17	15	398869	402139	405391	408628	411849	415053	418242	421414
18	30	398924	402193	405446	408682	411902	415106	418295	421467
19	45	398978	402247	405500	408736	411956	415160	418348	421520
20	0	9.399033	9.402302	9.405554	9.408789	9.412009	9.415213	9.418401	9.421573
21	15	399088	402356	405608	408843	412063	415266	418454	421623
22	30	399142	402410	405662	408896	412116	415319	418507	421678
23	45	399197	402465	405716	408951	412170	415373	418560	421731
24	0	9.399252	9.402519	9.405770	9.409005	9.412223	9.415426	9.418613	9.421784
25	15	399306	402573	405824	409058	412277	415479	418666	421836
26	30	399361	402628	405879	409112	412330	415532	418719	421889
27	45	399415	402682	405932	409166	412384	415586	418771	421942
28	0	9.399470	9.402736	9.405986	9.409220	9.412437	9.415639	9.418825	9.421994
29	15	399524	402790	406040	409273	412491	415692	418877	422047
30	30	399579	402845	406094	409327	412544	415745	418930	422100
31	45	399634	402899	406148	409381	412598	415798	418983	422152
32	0	9.399688	9.402953	9.406202	9.409435	9.412651	9.415852	9.419036	9.422205
33	15	399743	403008	406256	409488	412705	415905	419089	422258
34	30	399797	403062	406310	409542	412758	415958	419142	422311
35	45	399852	403116	406364	409596	412812	416011	419195	422363
36	0	9.399906	9.403170	9.406418	9.409650	9.412865	9.416065	9.419248	9.422416
37	15	399961	403225	406472	409703	412918	416118	419301	422469
38	30	400015	403279	406526	409757	412972	416171	419354	422521
39	45	400070	403333	406580	409811	413025	416224	419407	422574
40	0	9.400124	9.403387	9.406634	9.409865	9.413079	9.416277	9.419460	9.422627
41	15	400179	403442	406688	409918	413132	416330	419513	422679
42	30	400233	403496	406742	409972	413186	416384	419566	422732
43	45	400288	403550	406796	410026	413239	416437	419618	422784
44	0	9.400343	9.403604	9.406850	9.410079	9.413293	9.416490	9.419671	9.422837
45	15	400397	403659	406904	410133	413346	416543	419724	422890
46	30	400451	403713	406958	410187	413399	416596	419777	422942
47	45	400506	403767	407012	410240	413453	416649	419830	422995
48	0	9.400560	9.403821	9.407066	9.410294	9.413506	9.416702	9.419883	9.423048
49	15	400615	403875	407120	410348	413560	416756	419936	423100
50	30	400669	403930	407174	410401	413613	416809	419989	423153
51	45	400724	403984	407228	410455	413666	416862	420041	423205
52	0	9.400778	9.404038	9.407281	9.410509	9.413720	9.416915	9.420094	9.423258
53	15	400833	404092	407335	410562	413773	416968	420147	423311
54	30	400887	404146	407389	410616	413827	417021	420200	423363
55	45	400942	404201	407443	410670	413880	417074	420253	423416
56	0	9.400996	9.404255	9.407497	9.410723	9.413933	9.417127	9.420306	9.423468
57	15	401051	404309	407551	410777	413987	417181	420359	423521
58	30	401105	404363	407605	410831	414040	417234	420411	423574
59	45	401159	404417	407659	410884	414093	417287	420464	423626
60	0	9.401214	9.404471	9.407713	9.410938	9.414147	9.417340	9.420517	9.423679
	59"	58"	57"	56"	55"	54"	53"	52"	51"

10"	11"	12"	13"	14"	15"	16"	17"	18"	19"
62 deg.	63 deg.					64 deg.			
9.429955	9.433070	9.436170	9.439255	9.442325	9.445379	9.448419	9.451445	9.454455	9.457451
430007	433192	436292	439306	442376	445430	448470	451495	454505	457501
430059	433174	436273	439358	442427	445481	448520	451545	454555	457551
430111	433226	436325	439409	442478	445532	448571	451595	454605	457601
430163	433277	436376	439460	442529	445583	448622	451646	454655	457651
430215	433329	436428	439511	442580	445633	448672	451696	454705	457700
430267	433381	436479	439563	442631	445684	448723	451748	454756	457750
430319	433433	436531	439614	442682	445735	448773	451797	454805	457800
430371	433485	436582	439665	442733	445786	448824	451847	454856	457850
430423	433536	436634	439716	442784	445836	448874	451897	454906	457899
430475	433588	436685	439768	442835	445887	448925	451947	454956	457949
430527	433640	436737	439819	442886	445938	448975	451998	455006	457999
430579	433692	436788	439870	442937	445989	449026	452048	455056	458049
430631	433743	436840	439921	442988	446039	449076	452098	455106	458099
430683	433795	436891	439973	443039	446090	449127	452148	455156	458148
430735	433847	436943	440024	443090	446141	449177	452199	455206	458198
430787	433898	436994	440075	443141	446192	449228	452249	455256	458248
430839	433950	437046	440126	443192	446242	449279	452299	455306	458299
430891	434002	437097	440177	443243	446293	449329	452349	455356	458347
430943	434054	437149	440229	443294	446344	449379	452400	455406	458397
430995	434105	437200	440280	443345	446394	449429	452450	455456	458447
431047	434157	437252	440331	443396	446445	449480	452500	455506	458497
431099	434209	437303	440382	443446	446496	449530	452550	455556	458548
431151	434260	437354	440433	443497	446547	449581	452600	455606	458598
431203	434312	437406	440485	443548	446597	449631	452651	455655	458648
431255	434364	437457	440536	443599	446648	449682	452701	455705	458699
431307	434415	437509	440587	443650	446699	449732	452751	455755	458749
431359	434467	437560	440638	443701	446749	449783	452801	455805	458799
431411	434519	437612	440689	443752	446800	449833	452851	455855	458849
431463	434570	437663	440741	443803	446851	449883	452902	455905	458899
431515	434622	437714	440792	443854	446902	449934	452952	455955	458949
431567	434674	437766	440843	443905	446952	449984	453002	456005	458999
431619	434725	437817	440894	443956	447003	450035	453052	456055	459049
431671	434777	437869	440945	444007	447053	450085	453102	456105	459099
431723	434829	437920	440996	444058	447104	450136	453152	456155	459149
431774	434880	437971	441047	444108	447155	450186	453203	456205	459199
431826	434932	438023	441099	444159	447205	450236	453253	456255	459249
431878	434984	438074	441150	444209	447256	450287	453303	456305	459299
431930	435035	438126	441201	444261	447306	450337	453353	456354	459349
431982	435087	438177	441252	444312	447357	450387	453403	456404	459399
432034	435139	438228	441303	444363	447408	450438	453453	456454	459449
432086	435190	438280	441354	444414	447458	450488	453503	456505	459499
432137	435242	438331	441405	444465	447509	450539	453554	456554	459549
432189	435293	438382	441456	444515	447560	450589	453604	456604	459599
432241	435345	438434	441507	444566	447610	450639	453654	456654	459649
432293	435397	438485	441559	444617	447661	450690	453704	456704	459699
432345	435446	438537	441610	444668	447711	450740	453754	456754	459749
432397	435500	438588	441661	444719	447762	450790	453804	456803	459799
432449	435551	438639	441712	444770	447813	450841	453854	456853	459849
432500	435603	438691	441763	444821	447863	450891	453904	456903	459899
432552	435655	438742	441814	444871	447914	450941	453954	456953	459949
432604	435706	438793	441865	444922	447964	450992	454005	457003	459997
432656	435758	438844	441916	444973	448015	451042	454055	457053	460036
432708	435809	438896	441967	445024	448065	451092	454105	457102	460086
432759	435861	438947	442018	445075	448116	451143	454155	457152	460136
432811	435912	438998	442069	445125	448167	451193	454205	457202	460185
432863	435964	439050	442120	445176	448217	451243	454255	457252	460235
432915	436016	439101	442172	445227	448268	451294	454305	457302	460284
432967	436067	439152	442223	445278	448318	451344	454355	457352	460334
433018	436119	439204	442274	445329	448369	451394	454405	457401	460383
433070	436170	439255	442325	445379	448419	451445	454455	457451	460433

		20"	21"	22"	23"	24"	25"	26"	27"	28"
65 deg.					66 deg.				67 d.	
1	0	9.460433	9.463100	9.466334	9.469293	9.472218	9.475129	9.478026	9.480909	9.483779
1	15	460483	463150	466403	469341	472260	475177	478074	480957	483827
2	30	460532	463199	466452	469390	472315	475225	478122	481005	483874
3	45	460582	463248	466501	469439	472363	475274	478170	481053	483922
4	0	9.460631	9.463398	9.466550	9.469488	9.472412	9.475322	9.478218	9.481101	9.483970
5	15	460681	463347	466599	469537	472461	475371	478267	481149	484018
6	30	460730	463396	466648	469586	472509	475419	478315	481197	484065
7	45	460780	463446	466697	469634	472558	475467	478363	481245	484113
8	0	9.460830	9.463595	9.466746	9.469683	9.472606	9.475516	9.478411	9.481293	9.484161
9	15	460879	463544	466795	469732	472655	475564	478459	481341	484208
10	30	460929	463594	466844	469781	472704	475612	478507	481388	484256
11	45	460977	463643	466893	469830	472752	475661	478555	481436	484304
12	0	9.461028	9.463792	9.466942	9.469879	9.472801	9.475709	9.478604	9.481484	9.484351
13	15	461077	463841	466991	469927	472849	475757	478652	481532	484399
14	30	461127	463891	467041	469976	472898	475806	478700	481580	484447
15	45	461176	463940	467090	470025	472947	475854	478748	481628	484494
16	0	9.461226	9.464189	9.467139	9.470074	9.472995	9.475903	9.478796	9.481676	9.484542
17	15	461275	464238	467188	470123	473044	475951	478844	481724	484590
18	30	461325	464288	467237	470172	473092	475999	478892	481772	484637
19	45	461374	464337	467286	470220	473141	476047	478940	481819	484685
20	0	9.461424	9.464386	9.467335	9.470269	9.473189	9.476096	9.478988	9.481867	9.484733
21	15	461473	464436	467384	470318	473238	476144	479037	481915	484780
22	30	461523	464485	467433	470367	473287	476192	479085	481963	484828
23	45	461572	464534	467482	470415	473335	476241	479133	482011	484875
24	0	9.461622	9.464583	9.467531	9.470464	9.473384	9.476289	9.479181	9.482059	9.484923
25	15	461671	464633	467580	470513	473432	476337	479229	482107	484971
26	30	461721	464682	467629	470562	473481	476386	479277	482154	485018
27	45	461770	464731	467678	470610	473529	476434	479325	482202	485066
28	0	9.461820	9.464780	9.467727	9.470659	9.473578	9.476482	9.479373	9.482250	9.485113
29	15	461869	464829	467776	470709	473626	476531	479421	482298	485161
30	30	461919	464879	467825	470757	473675	476579	479469	482346	485209
31	45	461968	464928	467874	470805	473723	476627	479517	482394	485256
32	0	9.462017	9.464977	9.467923	9.470854	9.473772	9.476675	9.479565	9.482441	9.485304
33	15	462067	465026	467972	470903	473820	476724	479613	482489	485352
34	30	462116	465076	468021	470952	473869	476772	479661	482537	485399
35	45	462166	465125	468070	471000	473917	476820	479709	482585	485447
36	0	9.462215	9.465174	9.468119	9.471049	9.473966	9.476869	9.479757	9.482633	9.485493
37	15	462265	465223	468168	471098	474014	476917	479806	482681	485542
38	30	462314	465272	468217	471147	474063	476965	479854	482729	485589
39	45	462363	465321	468265	471195	474111	477013	479902	482777	485637
40	0	9.462413	9.465371	9.468314	9.471244	9.474160	9.477062	9.479950	9.482824	9.485685
41	15	462462	465420	468363	471293	474208	477110	479998	482872	485732
42	30	462512	465469	468412	471342	474257	477158	480046	482919	485780
43	45	462561	465518	468462	471390	474305	477206	480094	482967	485827
44	0	9.462611	9.465567	9.468510	9.471439	9.474354	9.477255	9.480142	9.483015	9.485875
45	15	462660	465617	468559	471488	474402	477303	480190	483063	485922
46	30	462709	465666	468608	471536	474451	477351	480238	483111	485971
47	45	462759	465715	468657	471585	474499	477399	480286	483158	486017
48	0	9.462808	9.465764	9.468706	9.471634	9.474547	9.477447	9.480334	9.483206	9.486065
49	15	462857	465813	468755	471682	474596	477496	480382	483254	486113
50	30	462907	465862	468804	471731	474644	477544	480430	483302	486160
51	45	462956	465911	468853	471780	474693	477592	480478	483349	486208
52	0	9.463006	9.465961	9.468901	9.471828	9.474741	9.477640	9.480526	9.483397	9.486255
53	15	463055	466010	468950	471877	474790	477688	480574	483445	486303
54	30	463104	466059	468999	471926	474838	477737	480621	483493	486350
55	45	463154	466108	469048	471974	474886	477785	480669	483540	486398
56	0	9.463203	9.466157	9.469097	9.472023	9.474935	9.477833	9.480717	9.483588	9.486445
57	15	463252	466206	469146	472072	474983	477881	480765	483636	486493
58	30	463302	466255	469195	472121	475032	477929	480813	483684	486540
59	45	463351	466304	469244	472169	475080	477978	480861	483731	486588
60	0	9.463400	9.466354	9.469293	9.472218	9.475129	9.478026	9.480909	9.483779	9.486635
		30"	36"	37"	36"	35"	34"	33"	32"	31"

4 Hours

Log. Havensine. (C)

4 Hours

30"	31"	32"	33"	34"	35"	36"	37"	38"	39"
67 deg.	68 deg.					69 deg.			
489478	492307	495123	497926	500716	503492	506256	509007	511745	514470
489535	492354	495170	497973	500752	503538	506302	509053	511790	514515
489572	492401	495217	498019	500809	503585	506348	509098	511836	514561
489620	492448	495264	498066	500855	503631	506394	509144	511881	514606
489667	492495	495311	498112	500901	503677	506440	509190	511927	514651
489714	492542	495357	498159	500948	503723	506486	509235	511972	514697
489761	492589	495404	498206	500994	503769	506532	509281	512018	514742
489809	492636	495451	498252	501040	503815	506578	509327	512063	514787
489856	492683	495498	498299	501087	503862	506624	509373	512109	514832
489903	492730	495544	498346	501133	503908	506669	509418	512154	514878
489950	492778	495591	498392	501179	503954	506715	509464	512200	514923
489999	492824	495638	498438	501226	504000	506761	509510	512245	514969
490045	492872	495685	498485	501272	504046	506807	509555	512291	515014
490092	492918	495732	498532	501318	504092	506853	509601	512336	515059
490139	492966	495778	498578	501365	504138	506899	509647	512382	515104
490186	493012	495825	498625	501411	504184	506945	509692	512427	515149
490234	493060	495872	498671	501457	504231	506991	509738	512473	515195
490281	493106	495919	498718	501504	504277	507037	509784	512518	515240
490328	493153	495966	498764	501550	504323	507083	509830	512564	515285
490375	493200	496012	498811	501596	504369	507128	509875	512609	515330
490423	493247	496059	498857	501643	504415	507174	509921	512655	515376
490470	493294	496106	498904	501689	504461	507220	509967	512700	515421
490517	493341	496153	498951	501735	504507	507266	510012	512746	515466
490564	493388	496199	498997	501782	504553	507312	510058	512791	515511
490611	493435	496246	499044	501828	504599	507358	510104	512836	515557
490658	493482	496293	499090	501874	504645	507404	510149	512882	515602
490706	493529	496339	499137	501921	504692	507450	510195	512927	515647
490753	493576	496386	499183	501967	504738	507495	510240	512973	515692
490800	493623	496433	499230	502013	504784	507541	510286	513018	515737
490847	493670	496480	499276	502059	504830	507587	510332	513064	515783
490894	493717	496526	499323	502106	504876	507633	510377	513109	515828
490941	493764	496573	499369	502152	504922	507679	510423	513154	515873
490989	493811	496620	499416	502198	504968	507725	510469	513200	515918
491036	493858	496666	499462	502244	505014	507771	510514	513245	515963
491083	493905	496713	499509	502291	505060	507816	510560	513291	516009
491130	493951	496760	499555	502337	505106	507862	510605	513336	516054
491177	493998	496807	499601	502383	505152	507908	510651	513381	516099
491224	494045	496853	499648	502429	505198	507954	510697	513427	516144
491271	494092	496900	499694	502475	505244	508000	510742	513472	516189
491318	494139	496947	499741	502522	505290	508045	510788	513518	516235
491366	494186	496993	499787	502568	505336	508091	510834	513563	516280
491413	494233	497040	499834	502614	505382	508137	510879	513608	516325
491460	494280	497087	499880	502661	505428	508183	510925	513654	516370
491507	494327	497133	499927	502707	505474	508229	510970	513699	516415
491554	494374	497180	499973	502753	505520	508275	511016	513745	516460
491601	494420	497227	500019	502799	505566	508320	511061	513790	516506
491648	494467	497273	500066	502846	505612	508366	511107	513835	516551
491695	494514	497320	500112	502892	505658	508412	511153	513881	516596
491742	494561	497367	500159	502938	505704	508458	511198	513926	516641
491789	494608	497413	500205	502984	505750	508503	511244	513971	516686
491837	494655	497460	500252	503031	505796	508549	511289	514017	516731
491884	494702	497516	500298	503077	505842	508595	511335	514062	516777
491931	494749	497553	500345	503123	505888	508641	511380	514107	516822
491978	494795	497600	500391	503169	505934	508687	511426	514153	516867
492025	494842	497646	500437	503215	505980	508732	511472	514199	516912
492072	494889	497693	500484	503261	506026	508778	511517	514243	516957
492119	494936	497740	500530	503308	506072	508824	511563	514289	517002
492166	494983	497786	500577	503354	506118	508870	511608	514334	517047
492213	495030	497833	500623	503400	506164	508915	511654	514379	517092
492260	495076	497879	500669	503446	506210	508961	511699	514425	517137
492307	495123	497926	500716	503492	506256	509007	511745	514470	517183
29"	28"	27"	26"	25"	24"	23"	22"	21"	20"

10 Hours

10 Hours

	40"	41"	42"	43"	44"	45"	46"	47"	48"	
	70 deg.				71 deg.				72 deg.	
0 0	9.517183	9.519883	9.522570	9.525245	9.527906	9.530559	9.533197	9.535823	9.538437	9.5
1 15	517226	519928	522615	525290	527962	530603	533241	535867	538481	9.5
2 30	517273	519972	522660	525334	527997	530647	533285	535911	538524	9.5
3 45	517318	520017	522704	525379	528041	530691	533328	535954	538568	9.5
4 0	9.517363	9.520062	9.522749	9.525423	9.528085	9.530733	9.533372	9.535998	9.538611	9.5
5 15	517408	520107	522794	525468	528129	530779	533416	536041	538655	9.5
6 30	517453	520152	522838	525512	528174	530823	533460	536085	538698	9.5
7 45	517498	520197	522883	525557	528218	530867	533504	536129	538741	9.5
8 0	9.517543	9.520242	9.522928	9.525601	9.528262	9.530911	9.533548	9.536172	9.538785	9.5
9 15	517588	520287	522972	525644	528306	530955	533592	536216	538828	9.5
10 30	517633	520331	523017	525689	528351	530999	533635	536260	538872	9.5
11 45	517679	520376	523062	525734	528395	531043	533679	536303	538915	9.5
12 0	9.517724	9.520421	9.523106	9.525779	9.528439	9.531087	9.533723	9.536347	9.538959	9.5
13 15	517769	520466	523151	525823	528483	531131	533767	536391	539003	9.5
14 30	517814	520511	523195	525868	528528	531175	533811	536434	539046	9.5
15 45	517859	520556	523240	525912	528572	531219	533855	536478	539089	9.5
16 0	9.517904	9.520601	9.523285	9.525957	9.528616	9.531263	9.533898	9.536521	9.539132	9.5
17 15	517949	520645	523329	526001	528660	531307	533942	536565	539176	9.5
18 30	517994	520690	523374	526045	528705	531351	533986	536609	539219	9.5
19 45	518039	520735	523419	526089	528749	531395	534030	536652	539263	9.5
20 0	9.518084	9.520780	9.523463	9.526134	9.528793	9.531439	9.534074	9.536698	9.539306	9.5
21 15	518129	520825	523508	526179	528837	531483	534117	536739	539349	9.5
22 30	518174	520870	523552	526223	528881	531527	534161	536783	539393	9.5
23 45	518219	520914	523597	526267	528926	531571	534205	536827	539436	9.5
24 0	9.518264	9.520959	9.523642	9.526312	9.528970	9.531615	9.534249	9.536870	9.539480	9.5
25 15	518309	521004	523686	526356	529014	531659	534293	536914	539523	9.5
26 30	518354	521049	523731	526401	529058	531703	534336	536957	539566	9.5
27 45	518399	521094	523775	526445	529102	531747	534380	537001	539610	9.5
28 0	9.518444	9.521139	9.523820	9.526489	9.529147	9.531791	9.534424	9.537045	9.539653	9.5
29 15	518489	521183	523865	526534	529191	531835	534468	537089	539697	9.5
30 30	518534	521228	523909	526578	529235	531879	534512	537131	539740	9.5
31 45	518579	521273	523954	526623	529279	531923	534555	537175	539783	9.5
32 0	9.518624	9.521318	9.523998	9.526667	9.529323	9.531967	9.534599	9.537219	9.539827	9.5
33 15	518669	521362	524043	526711	529367	532011	534641	537262	539870	9.5
34 30	518714	521407	524088	526756	529412	532055	534687	537307	539913	9.5
35 45	518759	521452	524132	526800	529456	532099	534730	537349	539957	9.5
36 0	9.518804	9.521497	9.524177	9.526847	9.529500	9.532143	9.534774	9.537393	9.540000	9.5
37 15	518849	521541	524221	526889	529544	532187	534818	537437	540043	9.5
38 30	518894	521586	524266	526933	529588	532231	534862	537480	540087	9.5
39 45	518939	521631	524310	526977	529632	532275	534905	537524	540130	9.5
40 0	9.518984	9.521676	9.524355	9.527022	9.529676	9.532319	9.534949	9.537567	9.540174	9.5
41 15	519029	521720	524399	527066	529721	532363	534993	537611	540217	9.5
42 30	519074	521765	524444	527111	529765	532407	535037	537654	540260	9.5
43 45	519119	521810	524489	527155	529809	532451	535080	537698	540303	9.5
44 0	9.519164	9.521855	9.524533	9.527199	9.529853	9.532495	9.535124	9.537741	9.540347	9.5
45 15	519209	521899	524578	527243	529897	532539	535168	537785	540390	9.5
46 30	519254	521944	524622	527288	529941	532582	535211	537828	540433	9.5
47 45	519299	521989	524667	527332	529985	532626	535255	537872	540477	9.5
48 0	9.519344	9.522034	9.524711	9.527376	9.530029	9.532670	9.535299	9.537915	9.540520	9.5
49 15	519389	522078	524756	527421	530074	532714	535343	537959	540563	9.5
50 30	519433	522123	524800	527465	530118	532758	535386	538003	540607	9.5
51 45	519478	522168	524845	527509	530162	532802	535430	538046	540650	9.5
52 0	9.519523	9.522213	9.524899	9.527554	9.530205	9.532846	9.535474	9.538090	9.540693	9.5
53 15	519568	522257	524934	527598	530250	532890	535517	538133	540737	9.5
54 30	519613	522302	524978	527642	530294	532934	535561	538176	540780	9.5
55 45	519658	522347	525023	527687	530338	532977	535605	538220	540823	9.5
56 0	9.519703	9.522391	9.525067	9.527731	9.530382	9.533021	9.535648	9.538263	9.540865	9.5
57 15	519748	522436	525112	527775	530426	533065	535692	538307	540910	9.5
58 30	519793	522481	525156	527820	530470	533109	535736	538350	540953	9.5
59 45	519838	522525	525201	527864	530514	533153	535779	538394	540997	9.5
60 0	9.519883	9.522570	9.525245	9.527906	9.530559	9.533197	9.535823	9.538437	9.541040	9.5
	19"	18"	17"	16"	15"	14"	13"	12"	11"	

From

Log. Haverina. (t)

4 Hours.

50°	51°	52°	53°	54°	55°	56°	57°	58°	59°
72 deg.	73 deg.				74 deg.				
9.543630	9.546208	9.549775	9.553330	9.556874	9.560406	9.563926	9.567435	9.570933	9.574419
543673	546251	549818	553373	556916	560448	563968	567477	570974	574460
543716	546294	549861	553415	556958	560490	564010	567518	571016	574502
543759	546337	549903	553458	557001	560532	564052	567560	571057	574543
543802	546380	549946	553500	557043	560574	564094	567602	571100	574584
543845	546423	549989	553543	557085	560616	564136	567644	571140	574626
543888	546466	549931	553585	557127	560658	564177	567685	571182	574667
543931	546508	549974	553628	557170	560700	564219	567727	571223	574708
543974	546551	549917	553670	557212	560742	564261	567769	571265	574750
544017	546594	549959	553712	557254	560784	564303	567810	571306	574791
544060	546637	549902	553755	557297	560826	564345	567852	571348	574832
544103	546680	549944	553797	557339	560868	564387	567894	571389	574874
544146	546723	549987	553840	557381	560910	564429	567936	571431	574915
544189	546766	549930	553882	557423	560952	564471	567977	571472	574956
544232	546808	549972	553925	557466	560994	564513	568019	571514	575000
544275	546851	549915	553967	557508	561036	564555	568061	571556	575041
544318	546894	549958	554010	557550	561078	564597	568103	571598	575083
544361	546937	549900	554052	557592	561120	564639	568145	571640	575124
544404	546980	549943	554095	557635	561162	564681	568187	571682	575166
544447	547022	549985	554137	557677	561204	564723	568229	571724	575208
544490	547065	549928	554180	557719	561246	564765	568271	571766	575249
544533	547108	549970	554222	557761	561288	564807	568313	571808	575291
544576	547151	549913	554264	557803	561330	564849	568355	571850	575332
544619	547194	549955	554307	557845	561372	564891	568397	571892	575374
544662	547237	549998	554349	557887	561414	564933	568439	571934	575416
544705	547279	549940	554391	557929	561456	564975	568481	571976	575458
544748	547322	549983	554434	557971	561498	565017	568523	572018	575500
544791	547365	549925	554476	558013	561540	565059	568565	572060	575542
544834	547408	549968	554518	558055	561582	565101	568607	572102	575584
544877	547451	549910	554560	558097	561624	565143	568649	572144	575626
544920	547494	549953	554603	558139	561666	565185	568691	572186	575668
544963	547537	549995	554645	558181	561708	565227	568733	572228	575710
545006	547579	549938	554687	558223	561750	565269	568775	572270	575752
545049	547622	549980	554730	558265	561792	565311	568817	572312	575794
545092	547665	549923	554772	558307	561834	565353	568859	572354	575836
545135	547708	549965	554814	558349	561876	565395	568901	572396	575878
545178	547751	549908	554857	558391	561918	565437	568943	572438	575920
545221	547793	549950	554899	558433	561960	565479	568985	572480	575962
545264	547836	549993	554941	558475	562002	565521	569027	572522	576004
545307	547879	549935	554984	558517	562044	565563	569069	572564	576046
545350	547921	549978	555026	558559	562086	565605	569111	572606	576088
545393	547964	549920	555068	558601	562128	565647	569153	572648	576130
545436	548006	549963	555110	558643	562170	565689	569195	572690	576172
545479	548049	549905	555152	558685	562212	565731	569237	572732	576214
545522	548092	549948	555194	558727	562254	565773	569279	572774	576256
545565	548135	549990	555236	558769	562296	565815	569321	572816	576298
545608	548177	549933	555278	558811	562338	565857	569363	572858	576340
545651	548220	549975	555320	558853	562380	565899	569405	572900	576382
545694	548263	549918	555362	558895	562422	565941	569447	572942	576424
545737	548306	549960	555404	558937	562464	565983	569489	572984	576466
545780	548348	549903	555446	558979	562506	566025	569531	573026	576508
545823	548391	549945	555488	559021	562548	566067	569573	573068	576550
545866	548434	549988	555530	559063	562590	566109	569615	573110	576592
545909	548476	549930	555572	559105	562632	566151	569657	573152	576634
545952	548519	549973	555614	559147	562674	566193	569699	573194	576676
545995	548562	549915	555656	559189	562716	566235	569741	573236	576718
546038	548605	549958	555698	559231	562758	566277	569783	573278	576760
546081	548647	549900	555740	559273	562800	566319	569825	573320	576802
546124	548690	549943	555782	559315	562842	566361	569867	573362	576844
546167	548732	549985	555824	559357	562884	566403	569909	573404	576886
546210	548775	549928	555866	559399	562926	566445	569951	573446	576928
546253	548818	549970	555908	559441	562968	566487	569993	573488	576970
546296	548861	549913	555950	559483	563010	566529	570035	573530	577012
546339	548903	549955	555992	559525	563052	566571	570077	573572	577054
546382	548946	549998	556034	559567	563094	566613	570119	573614	577096
546425	548989	549940	556076	559609	563136	566655	570161	573656	577138
546468	549032	549983	556118	559651	563178	566697	570203	573698	577180
546511	549074	549925	556160	559693	563220	566739	570245	573740	577222
546554	549117	549968	556202	559735	563262	566781	570287	573782	577264
546597	549160	549910	556244	559777	563304	566823	570329	573824	577306
546640	549203	549953	556286	559819	563346	566865	570371	573866	577348
546683	549245	549995	556328	559861	563388	566907	570413	573908	577390
546726	549288	549938	556370	559903	563430	566949	570455	573950	577432
546769	549331	549980	556412	559945	563472	566991	570497	573992	577474
546812	549374	549923	556454	559987	563514	567033	570539	574034	577516
546855	549417	549965	556496	560029	563556	567075	570581	574076	577558
546898	549460	549908	556538	560071	563598	567117	570623	574118	577600
546941	549503	549950	556580	560113	563640	567159	570665	574160	577642
546984	549546	549993	556622	560155	563682	567201	570707	574202	577684
547027	549589	549935	556664	560197	563724	567243	570749	574244	577726
547070	549632	549978	556706	560239	563766	567285	570791	574286	577768
547113	549675	549920	556748	560281	563808	567327	570833	574328	577810
547156	549718	549963	556790	560323	563850	567369	570875	574370	577852
547199	549761	549905	556832	560365	563892	567411	570917	574412	577894
547242	549804	549948	556874	560407	563934	567453	570959	574454	577936
547285	549847	549990	556916	560449	563976	567495	571001	574496	577978
547328	549890	549933	556958	560491	564018	567537	571043	574538	578020
547371	549933	549975	556999	560533	564060	567579	571085	574580	578062
547414	549976	549918	557041	560575	564102	567621	571127	574622	578104
547457	550019	549960	557083	560617	564144	567663	571169	574664	578146
547500	550062	549903	557125	560659	564186	567705	571211	574706	578188
547543	550105	549945	557167	560701	564228	567747	571253	574748	578230
547586	550148	549988	557209	560743	564270	567789	571295	574790	578272
547629	550191	549930	557251	560785	564312	567831	571337	574832	578314
547672	550234	549973	557293	560827	564354	567873	571379	574874	578356
547715	550277	549915	557335	560869	564396	567915	571421	574916	578398
547758	550320	549958	557377	560911	564438	567957	571463	574958	578440
547801	550363	549900	557419	560953	564480	567999	571505	575000	578482
547844	550406	549943	557461	560995	564522	568041	571547	575042	578524
547887	550449	549985	557503	561037	564564	568083	571589	575084	578566
547930	550492	549928	557545	561079	564606	568125	571631	575126	578608
547973	550535	549970	557587	561121	564648	568167	571673	575168	578650
548016	550578	549913	557629	561163	564690	568209	571715	575210	578692
548059	550621	549955	557671	561205	564732	568251			

	0"	1"	2"	3"	4"	5"	6"	7"	8"
	75 deg.				76 deg.				77 deg.
0	568894	571358	573911	576253	578684	581104	583513	585911	588299
1	568933	571399	573952	576294	578724	581144	583553	585951	588339
2	568977	571440	573993	576334	578765	581184	583593	585991	588379
3	569018	571481	573933	576375	578805	581225	583633	586031	588418
4	569059	571522	573974	576415	578846	581265	583673	586071	588458
5	569100	571563	574015	576456	578886	581305	583713	586111	588498
6	569141	571604	574056	576497	578926	581345	583753	586151	588537
7	569182	571645	574097	576537	578967	581386	583793	586191	588577
8	569223	571686	574137	576578	579007	581426	583834	586230	588617
9	569265	571727	574178	576618	579048	581466	583873	586270	588656
10	569306	571768	574219	576659	579088	581506	583914	586310	588696
11	569347	571809	574260	576699	579128	581546	583954	586350	588736
12	569388	571850	574300	576740	579169	581587	583994	586390	588775
13	569429	571891	574341	576781	579209	581627	584034	586430	588815
14	569470	571932	574382	576821	579250	581667	584074	586470	588855
15	569511	571973	574423	576862	579290	581707	584114	586509	588894
16	569552	572013	574463	576902	579330	581747	584154	586549	588934
17	569593	572054	574504	576943	579371	581788	584194	586589	588974
18	569635	572095	574545	576983	579411	581828	584234	586629	589013
19	569676	572136	574586	577024	579451	581868	584274	586669	589053
20	569717	572177	574626	577065	579492	581908	584314	586709	589093
21	569758	572218	574667	577105	579532	581948	584354	586749	589132
22	569799	572259	574708	577146	579573	581989	584394	586789	589172
23	569840	572300	574748	577186	579613	582029	584434	586828	589212
24	569881	572341	574789	577227	579653	582069	584474	586868	589251
25	569922	572382	574830	577267	579694	582109	584514	586908	589291
26	569963	572423	574871	577308	579734	582149	584554	586947	589330
27	570004	572463	574911	577348	579774	582189	584594	586987	589370
28	570045	572504	574952	577389	579815	582229	584634	587027	589410
29	570087	572545	574993	577429	579855	582270	584674	587067	589450
30	570128	572586	575033	577470	579895	582310	584714	587107	589490
31	570169	572627	575074	577510	579936	582350	584754	587146	589529
32	570210	572668	575115	577551	579976	582390	584794	587186	589569
33	570251	572709	575155	577591	580016	582430	584833	587226	589608
34	570292	572750	575196	577632	580057	582470	584873	587266	589647
35	570333	572790	575237	577672	580097	582511	584913	587306	589687
36	570374	572831	575278	577713	580137	582551	584953	587345	589727
37	570415	572872	575318	577753	580177	582591	584993	587385	589766
38	570456	572913	575359	577794	580218	582631	585033	587425	589806
39	570497	572954	575400	577834	580258	582671	585073	587465	589845
40	570538	572995	575440	577875	580299	582711	585113	587504	589885
41	570579	573036	575480	577915	580339	582751	585153	587544	589924
42	570620	573076	575522	577956	580379	582792	585193	587584	589964
43	570661	573117	575562	577996	580419	582832	585233	587624	590004
44	570702	573158	575603	578037	580460	582872	585273	587663	590043
45	570743	573199	575644	578077	580500	582912	585313	587703	590083
46	570784	573240	575684	578118	580540	582952	585353	587743	590123
47	570825	573281	575725	578158	580580	582992	585393	587783	590162
48	570866	573321	575766	578199	580621	583032	585433	587822	590202
49	570907	573362	575806	578239	580661	583072	585473	587862	590241
50	570948	573403	575847	578280	580701	583112	585513	587902	590281
51	570989	573444	575887	578320	580742	583152	585552	587942	590320
52	571030	573485	575928	578360	580782	583193	585592	587981	590360
53	571071	573525	575969	578401	580822	583233	585632	588021	590399
54	571112	573566	576009	578441	580862	583273	585672	588061	590439
55	571153	573607	576050	578482	580903	583313	585712	588101	590478
56	571194	573648	576091	578522	580943	583353	585752	588140	590518
57	571235	573689	576131	578563	580983	583393	585792	588180	590557
58	571276	573730	576172	578603	581023	583433	585832	588220	590597
59	571317	573770	576212	578643	581064	583473	585872	588259	590637
60	571358	573811	576253	578684	581104	583513	585911	588299	590676
59"	59"	58"	57"	56"	55"	54"	53"	52"	51"

1 Hour

Log. Havardnes. (1)

3 Hours.

	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	
	77 deg.			78 deg.			79 deg.				
59.50.00	59.5338	59.5774	59.6007	59.6240	59.6471	59.6702	59.6931	59.7159	59.7387	59.7615	60
59.50.05	59.5343	59.5779	59.6012	59.6245	59.6476	59.6707	59.6936	59.7164	59.7392	59.7620	59
59.50.10	59.5348	59.5784	59.6017	59.6250	59.6481	59.6712	59.6941	59.7169	59.7397	59.7625	58
59.50.15	59.5353	59.5789	59.6022	59.6255	59.6486	59.6717	59.6946	59.7174	59.7402	59.7630	57
59.50.20	59.5358	59.5794	59.6027	59.6260	59.6491	59.6722	59.6951	59.7179	59.7407	59.7635	56
59.50.25	59.5363	59.5799	59.6032	59.6265	59.6496	59.6727	59.6956	59.7184	59.7412	59.7640	55
59.50.30	59.5368	59.5804	59.6037	59.6270	59.6501	59.6732	59.6961	59.7190	59.7418	59.7646	54
59.50.35	59.5373	59.5809	59.6042	59.6275	59.6506	59.6737	59.6966	59.7195	59.7423	59.7651	53
59.50.40	59.5378	59.5814	59.6047	59.6280	59.6511	59.6742	59.6971	59.7200	59.7428	59.7656	52
59.50.45	59.5383	59.5819	59.6052	59.6285	59.6516	59.6747	59.6976	59.7205	59.7433	59.7661	51
59.50.50	59.5388	59.5824	59.6057	59.6290	59.6521	59.6752	59.6981	59.7210	59.7438	59.7666	50
59.50.55	59.5393	59.5829	59.6062	59.6295	59.6526	59.6757	59.6986	59.7215	59.7443	59.7671	49
59.51.00	59.5398	59.5834	59.6067	59.6300	59.6531	59.6762	59.6991	59.7220	59.7448	59.7676	48
59.51.05	59.5403	59.5839	59.6072	59.6305	59.6536	59.6767	59.7000	59.7225	59.7453	59.7681	47
59.51.10	59.5408	59.5844	59.6077	59.6310	59.6541	59.6772	59.7005	59.7230	59.7458	59.7686	46
59.51.15	59.5413	59.5849	59.6082	59.6315	59.6546	59.6777	59.7010	59.7235	59.7463	59.7691	45
59.51.20	59.5418	59.5854	59.6087	59.6320	59.6551	59.6782	59.7015	59.7240	59.7468	59.7696	44
59.51.25	59.5423	59.5859	59.6092	59.6325	59.6556	59.6787	59.7020	59.7245	59.7473	59.7701	43
59.51.30	59.5428	59.5864	59.6097	59.6330	59.6561	59.6792	59.7025	59.7250	59.7478	59.7706	42
59.51.35	59.5433	59.5869	59.6102	59.6335	59.6566	59.6797	59.7030	59.7255	59.7483	59.7711	41
59.51.40	59.5438	59.5874	59.6107	59.6340	59.6571	59.6802	59.7035	59.7260	59.7488	59.7716	40
59.51.45	59.5443	59.5879	59.6112	59.6345	59.6576	59.6807	59.7040	59.7265	59.7493	59.7721	39
59.51.50	59.5448	59.5884	59.6117	59.6350	59.6581	59.6812	59.7045	59.7270	59.7498	59.7726	38
59.51.55	59.5453	59.5889	59.6122	59.6355	59.6586	59.6817	59.7050	59.7275	59.7503	59.7731	37
59.52.00	59.5458	59.5894	59.6127	59.6360	59.6591	59.6822	59.7055	59.7280	59.7508	59.7736	36
59.52.05	59.5463	59.5899	59.6132	59.6365	59.6596	59.6827	59.7060	59.7285	59.7513	59.7741	35
59.52.10	59.5468	59.5904	59.6137	59.6370	59.6601	59.6832	59.7065	59.7290	59.7518	59.7746	34
59.52.15	59.5473	59.5909	59.6142	59.6375	59.6606	59.6837	59.7070	59.7295	59.7523	59.7751	33
59.52.20	59.5478	59.5914	59.6147	59.6380	59.6611	59.6842	59.7075	59.7300	59.7528	59.7756	32
59.52.25	59.5483	59.5919	59.6152	59.6385	59.6616	59.6847	59.7080	59.7305	59.7533	59.7761	31
59.52.30	59.5488	59.5924	59.6157	59.6390	59.6621	59.6852	59.7085	59.7310	59.7538	59.7766	30
59.52.35	59.5493	59.5929	59.6162	59.6395	59.6626	59.6857	59.7090	59.7315	59.7543	59.7771	29
59.52.40	59.5498	59.5934	59.6167	59.6400	59.6631	59.6862	59.7095	59.7320	59.7548	59.7776	28
59.52.45	59.5503	59.5939	59.6172	59.6405	59.6636	59.6867	59.7100	59.7325	59.7553	59.7781	27
59.52.50	59.5508	59.5944	59.6177	59.6410	59.6641	59.6872	59.7105	59.7330	59.7558	59.7786	26
59.52.55	59.5513	59.5949	59.6182	59.6415	59.6646	59.6877	59.7110	59.7335	59.7563	59.7791	25
59.53.00	59.5518	59.5954	59.6187	59.6420	59.6651	59.6882	59.7115	59.7340	59.7568	59.7796	24
59.53.05	59.5523	59.5959	59.6192	59.6425	59.6656	59.6887	59.7120	59.7345	59.7573	59.7801	23
59.53.10	59.5528	59.5964	59.6197	59.6430	59.6661	59.6892	59.7125	59.7350	59.7578	59.7806	22
59.53.15	59.5533	59.5969	59.6202	59.6435	59.6666	59.6897	59.7130	59.7355	59.7583	59.7811	21
59.53.20	59.5538	59.5974	59.6207	59.6440	59.6671	59.6902	59.7135	59.7360	59.7588	59.7816	20
59.53.25	59.5543	59.5979	59.6212	59.6445	59.6676	59.6907	59.7140	59.7365	59.7593	59.7821	19
59.53.30	59.5548	59.5984	59.6217	59.6450	59.6681	59.6912	59.7145	59.7370	59.7598	59.7826	18
59.53.35	59.5553	59.5989	59.6222	59.6455	59.6686	59.6917	59.7150	59.7375	59.7603	59.7831	17
59.53.40	59.5558	59.5994	59.6227	59.6460	59.6691	59.6922	59.7155	59.7380	59.7608	59.7836	16
59.53.45	59.5563	59.5999	59.6232	59.6465	59.6696	59.6927	59.7160	59.7385	59.7613	59.7841	15
59.53.50	59.5568	59.6004	59.6237	59.6470	59.6701	59.6932	59.7165	59.7390	59.7618	59.7846	14
59.53.55	59.5573	59.6009	59.6242	59.6475	59.6706	59.6937	59.7170	59.7395	59.7623	59.7851	13
59.54.00	59.5578	59.6014	59.6247	59.6480	59.6711	59.6942	59.7175	59.7400	59.7628	59.7856	12
59.54.05	59.5583	59.6019	59.6252	59.6485	59.6716	59.6947	59.7180	59.7405	59.7633	59.7861	11
59.54.10	59.5588	59.6024	59.6257	59.6490	59.6721	59.6952	59.7185	59.7410	59.7638	59.7866	10
59.54.15	59.5593	59.6029	59.6262	59.6495	59.6726	59.6957	59.7190	59.7415	59.7643	59.7871	9
59.54.20	59.5598	59.6034	59.6267	59.6500	59.6731	59.6962	59.7195	59.7420	59.7648	59.7876	8
59.54.25	59.5603	59.6039	59.6272	59.6505	59.6736	59.6967	59.7200	59.7425	59.7653	59.7881	7
59.54.30	59.5608	59.6044	59.6277	59.6510	59.6741	59.6972	59.7205	59.7430	59.7658	59.7886	6
59.54.35	59.5613	59.6049	59.6282	59.6515	59.6746	59.6977	59.7210	59.7435	59.7663	59.7891	5
59.54.40	59.5618	59.6054	59.6287	59.6520	59.6751	59.6982	59.7215	59.7440	59.7668	59.7896	4
59.54.45	59.5623	59.6059	59.6292	59.6525	59.6756	59.6987	59.7220	59.7445	59.7673	59.7901	3
59.54.50	59.5628	59.6064	59.6297	59.6530	59.6761	59.6992	59.7225	59.7450	59.7678	59.7906	2
59.54.55	59.5633	59.6069	59.6302	59.6535	59.6766	59.7000	59.7230	59.7455	59.7683	59.7911	1
59.55.00	59.5638	59.6074	59.6307	59.6540	59.6771	59.7005	59.7235	59.7460	59.7688	59.7916	0

1 Hour.

5 Hours.

Log. Havermina. (C)

	20"	21"	22"	23"	24"	25"	26"	27"	28"
	80 deg.				81 deg.				82 d.
0	9.616135	9.618388	9.620632	9.622865	9.625089	9.627303	9.629507	9.631701	9.633886
15	616173	618426	620669	622902	625126	627339	629533	631738	633922
30	616210	618463	620706	622939	625163	627376	629580	631774	633958
45	616248	618501	620744	622977	625199	627413	629617	631811	633995
1	9.616286	9.618539	9.620781	9.623014	9.625237	9.627450	9.629653	9.631847	9.634031
15	616323	618576	620818	623051	625274	627487	629690	631884	634067
30	616361	618614	620856	623088	625311	627524	629727	631920	634104
45	616398	618650	620893	623125	625348	627561	629763	631956	634140
8	9.616435	9.618688	9.620930	9.623162	9.625385	9.627597	9.629800	9.631993	9.634176
15	616474	618725	620967	623199	625421	627634	629836	632029	634213
30	616511	618763	621005	623236	625458	627671	629873	632066	634249
45	616548	618800	621042	623274	625495	627707	629910	632102	634285
12	9.616586	9.618838	9.621079	9.623311	9.625532	9.627744	9.629946	9.632139	9.634322
15	616624	618875	621116	623348	625569	627781	629983	632175	634358
30	616662	618913	621154	623385	625606	627818	630020	632212	634394
45	616699	618950	621191	623422	625643	627855	630056	632248	634430
16	9.616737	9.618988	9.621228	9.623459	9.625680	9.627891	9.630093	9.632285	9.634467
15	616774	619025	621265	623496	625717	627928	630129	632321	634503
30	616812	619062	621303	623533	625754	627965	630166	632358	634539
45	616850	619100	621340	623570	625791	628002	630203	632394	634576
20	9.616887	9.619137	9.621377	9.623608	9.625829	9.628038	9.630239	9.632430	9.634619
15	616925	619175	621414	623645	625865	628075	630276	632467	634656
30	616962	619212	621452	623682	625902	628112	630312	632503	634694
45	617000	619249	621489	623719	625939	628149	630349	632540	634731
24	9.617038	9.619287	9.621526	9.623756	9.625976	9.628185	9.630386	9.632576	9.634757
15	617075	619324	621563	623793	626012	628222	630422	632613	634793
30	617113	619362	621601	623830	626049	628259	630459	632649	634830
45	617150	619399	621638	623867	626086	628296	630495	632685	634866
28	9.617188	9.619436	9.621675	9.623904	9.626123	9.628332	9.630532	9.632722	9.634902
15	617225	619474	621712	623941	626160	628369	630569	632758	634938
30	617263	619511	621750	623978	626197	628406	630605	632795	634975
45	617301	619549	621787	624015	626234	628443	630642	632831	635011
32	9.617338	9.619586	9.621824	9.624052	9.626271	9.628479	9.630678	9.632867	9.635047
15	617375	619623	621861	624089	626308	628516	630715	632904	635083
30	617413	619661	621899	624126	626345	628553	630751	632940	635120
45	617451	619698	621936	624163	626382	628590	630788	632977	635156
36	9.617488	9.619736	9.621973	9.624201	9.626418	9.628626	9.630825	9.633013	9.635192
15	617526	619773	622010	624238	626455	628663	630862	633049	635228
30	617563	619810	622047	624275	626492	628700	630898	633086	635265
45	617601	619848	622085	624312	626529	628736	630934	633122	635301
40	9.617638	9.619886	9.622122	9.624349	9.626566	9.628773	9.630971	9.633159	9.635337
15	617676	619923	622159	624386	626603	628810	631007	633195	635373
30	617713	619960	622196	624423	626640	628847	631044	633231	635409
45	617751	619997	622233	624460	626676	628883	631080	633268	635446
44	9.617788	9.620031	9.622271	9.624497	9.626713	9.628920	9.631117	9.633304	9.635482
15	617826	620072	622308	624534	626750	628957	631153	633341	635518
30	617863	620109	622345	624571	626787	628993	631190	633377	635554
45	617901	620146	622382	624608	626824	629031	631226	633413	635590
48	9.617938	9.620184	9.622419	9.624645	9.626861	9.629067	9.631263	9.633450	9.635627
15	617976	620221	622456	624682	626897	629103	631299	633486	635663
30	618013	620259	622494	624719	626934	629140	631336	633522	635699
45	618051	620296	622531	624756	626971	629177	631373	633559	635735
52	9.618088	9.620331	9.622568	9.624793	9.627008	9.629213	9.631409	9.633595	9.635771
15	618126	620370	622605	624830	627045	629250	631446	633631	635808
30	618163	620408	622642	624867	627082	629287	631482	633668	635844
45	618201	620445	622679	624904	627118	629323	631519	633704	635880
56	9.618238	9.620482	9.622717	9.624941	9.627155	9.629360	9.631555	9.633740	9.635916
15	618276	620520	622754	624978	627192	629397	631592	633777	635952
30	618313	620557	622791	625015	627229	629433	631628	633813	635989
45	618351	620594	622828	625052	627266	629471	631665	633849	636025
60	9.618388	9.620632	9.622865	9.625089	9.627303	9.629507	9.631701	9.633886	9.636061
	30"	38"	37"	36"	35"	34"	33"	32"	31"

18 Hours.

10"	31"	32"	33"	34"	35"	36"	37"	38"	39"
82 deg.	83 deg.					84 deg.			
638237	640382	642529	644666	646794	648913	651022	653122	655213	657294
638363	640418	642565	644702	646829	648948	651057	653157	655247	657329
638499	640454	642601	644737	646865	648983	651092	653192	655282	657365
638635	640490	642636	644773	646900	649018	651127	653227	655317	657398
638771	640526	642672	644809	646936	649053	651162	653261	655352	657433
638907	640562	642709	644844	646971	649088	651197	653296	655387	657467
639043	640598	642743	644880	647006	649124	651232	653331	655421	657502
639179	640633	642779	644915	647042	649159	651267	653366	655456	657536
639315	640669	642815	644951	647077	649194	651302	653401	655491	657571
639451	640705	642850	644986	647112	649230	651337	653436	655525	657606
639587	640741	642886	645022	647148	649265	651372	653471	655560	657640
639723	640777	642922	645057	647183	649300	651407	653506	655595	657675
639859	640813	642957	645093	647219	649335	651443	653541	655630	657709
639994	640848	642993	645128	647254	649370	651478	653575	655664	657744
640130	640884	643029	645164	647289	649406	651513	653610	655699	657779
640266	640920	643064	645199	647325	649441	651548	653645	655734	657813
640402	640956	643100	645235	647360	649476	651583	653680	655769	657848
640538	640992	643136	645270	647395	649511	651618	653715	655803	657883
640674	641028	643171	645306	647431	649546	651653	653750	655838	657917
640810	641063	643207	645341	647466	649581	651688	653785	655873	657951
640946	641099	643243	645377	647501	649617	651723	653820	655907	657986
641082	641135	643278	645412	647537	649652	651758	653854	655942	658020
641218	641171	643314	645448	647572	649687	651793	653889	655977	658055
641354	641207	643349	645483	647607	649722	651828	653924	656011	658090
641490	641242	643385	645519	647643	649757	651863	653959	656046	658124
641626	641278	643421	645554	647678	649792	651898	653994	656081	658159
641762	641314	643456	645590	647713	649828	651933	654029	656116	658193
641898	641350	643492	645625	647749	649863	651968	654064	656150	658228
642034	641385	643528	645660	647784	649898	652003	654099	656185	658262
642170	641421	643563	645696	647819	649933	652038	654133	656220	658297
642306	641457	643599	645731	647855	649968	652073	654168	656254	658331
642442	641493	643635	645766	647890	650003	652108	654203	656288	658366
642578	641529	643670	645802	647925	650039	652143	654238	656322	658400
642714	641564	643706	645838	647960	650074	652178	654273	656357	658435
642850	641600	643741	645873	647996	650109	652213	654308	656393	658470
642986	641636	643777	645909	648031	650144	652248	654342	656428	658504
643122	641672	643813	645944	648066	650179	652283	654377	656463	658539
643258	641707	643848	645980	648101	650214	652318	654412	656497	658573
643394	641743	643884	646015	648137	650249	652353	654447	656532	658608
643530	641779	643919	646050	648172	650285	652388	654482	656567	658642
643666	641815	643955	646086	648207	650320	652423	654517	656601	658677
643802	641851	643991	646121	648243	650355	652458	654551	656636	658711
643938	641886	644026	646157	648278	650390	652493	654586	656671	658746
644074	641922	644062	646192	648313	650425	652528	654621	656705	658780
644210	641958	644097	646228	648349	650460	652563	654656	656740	658815
644346	641993	644133	646263	648384	650495	652598	654691	656775	658849
644482	642029	644168	646298	648419	650530	652633	654726	656809	658884
644618	642065	644204	646334	648454	650566	652667	654760	656844	658918
644754	642101	644240	646369	648490	650601	652702	654795	656879	658953
644890	642136	644275	646405	648525	650636	652737	654830	656913	658987
645026	642172	644311	646440	648560	650671	652772	654865	656948	659022
645162	642208	644346	646476	648595	650706	652807	654899	656982	659056
645298	642243	644382	646511	648631	650741	652842	654934	657017	659091
645434	642279	644417	646546	648666	650776	652877	654969	657052	659125
645570	642315	644453	646582	648701	650811	652912	655004	657086	659160
645706	642351	644489	646617	648736	650846	652947	655039	657121	659194
645842	642386	644524	646653	648772	650881	652982	655073	657156	659229
645978	642422	644560	646688	648807	650916	653017	655108	657190	659263
646114	642458	644595	646723	648842	650952	653052	655143	657225	659298
646250	642493	644631	646759	648877	650987	653087	655178	657259	659332
646386	642529	644666	646794	648913	651022	653122	655213	657294	659367

		20"	21"	22"	23"	24"	25"			48"	49"
		80 deg.								87 deg.	
0	0	9.616133	9.618348	9.620632	9.622885	9.62508		139	673623	9.675624	9.677
1	15	616173	618426	620689	622902	6251		140	673657	675658	677
2	30	616210	618463	620706	622939	62		141	673690	675691	677
3	45	616248	618501	620744	622977	6		142	673724	675724	677
4	0	9.616296	9.618534	9.620781	9.623014			143	673757	9.675758	9.677
5	15	616323	618576	620818	623051			144	673790	675792	677
6	30	616361	618613	620856	62308			145	673824	675824	677
7	45	616398	618650	620893	6231			146	673857	675857	677
8	0	9.616436	9.618688	9.620930	9.62			147	673890	9.675891	9.677
9	15	616474	618725	620967	6			148	673924	675924	677
10	30	616511	618763	621005				149	673957	675957	677
11	45	616548	618800	621042				150	673991	675991	677
12	0	9.616586	9.618838	9.621079				151	9.674024	9.676022	9.677
13	15	616624	618875	62111				152	674057	676057	677
14	30	616662	618913	6211				153	674091	676091	677
15	45	616699	618950	621				154	674124	676124	677
16	0	9.616737	9.618988	9.6				155	9.674158	9.676157	9.677
17	15	616774	619025					156	674191	676191	677
18	30	616812	619062					157	674224	676224	677
19	45	616850	619100					158	674257	676257	677
20	0	9.616887	9.61913					159	9.674291	9.676290	9.677
21	15	616925	6191					160	674324	676324	677
22	30	616962	619					161	674357	676357	677
23	45	617000	619					162	674391	676391	677
24	0	9.617038	9.61					163	9.674424	9.676423	9.677
25	15	617075						164	674457	676457	677
26	30	617113						165	674491	676491	677
27	45	617150						166	674524	676524	677
28	0	9.617188						167	9.674558	9.676557	9.677
29	15	61722						168	674591	676591	677
30	30	61725						169	674624	676624	677
31	45	6173						170	674657	676657	677
32	0	9.617						171	9.674691	9.676690	9.677
33	15	61						172	674724	676724	677
34	30	61						173	674757	676757	677
35	45	6						174	674791	676791	677
36	0							175	9.674824	9.676823	9.677
37	15							176	674857	676857	677
38	30							177	674891	676891	677
39	45							178	674924	676924	677
40	0							179	9.674958	9.676957	9.677
41	15							180	674991	676991	677
42	30							181	675024	677024	677
43	45							182	675057	677057	677
44	0							183	9.675091	9.677090	9.677
45	15							184	675124	677124	677
46	30							185	675157	677157	677
47	45							186	675191	677191	677
48	0							187	9.675224	9.677223	9.677
49	15							188	675257	677257	677
50	30							189	675291	677291	677
51	45							190	675324	677324	677
52	0							191	9.675358	9.677357	9.677
53	15							192	675391	677391	677
54	30							193	675424	677424	677
55	45							194	675457	677457	677
56	0							195	9.675491	9.677490	9.677
57	15							196	675524	677524	677
58	30							197	675557	677557	677
59	45							198	675591	677591	677
60	0							199	9.675624	9.677623	9.677
61	15							200	675657	677657	677
62	30							201	675691	677691	677
63	45							202	675724	677724	677
64	0							203	9.675758	9.677757	9.677
65	15							204	675791	677791	677
66	30							205	675824	677824	677
67	45							206	675857	677857	677
68	0							207	9.675891	9.677890	9.677
69	15							208	675924	677924	677
70	30							209	675957	677957	677
71	45							210	675991	677991	677
72	0							211	9.676024	9.678023	9.677
73	15							212	676057	678057	677
74	30							213	676091	678091	677
75	45							214	676124	678124	677
76	0							215	9.676158	9.678157	9.677
77	15							216	676191	678191	677
78	30							217	676224	678224	677
79	45							218	676257	678257	677
80	0							219	9.676291	9.678290	9.677
81	15							220	676324	678324	677
82	30							221	676357	678357	677
83	45							222	676391	678391	677
84	0							223	9.676424	9.678423	9.677
85	15							224	676457	678457	677
86	30							225	676491	678491	677
87	45							226	676524	678524	677
88	0							227	9.676558	9.678557	9.677
89	15							228	676591	678591	677
90	30							229	676624	678624	677
91	45							230	676657	678657	677
92	0							231	9.676691	9.678690	9.677
93	15							232	676724	678724	677
94	30							233	676757	678757	677
95	45							234	676791	678791	677
96	0							235	9.676824	9.678823	9.677
97	15							236	676857	678857	677
98	30							237	676891	678891	677
99	45							238	676924	678924	677
100	0							239	9.676958	9.678957	9.677
101	15							240	676991	678991	677
102	30							241	677024	679024	677
103	45							242	677057	679057	677
104	0							243	9.677091	9.679090	9.677
105	15							244	677124	679124	677
106	30							245	677157	679157	677
107	45							246	677191	679191	677
108	0							247	9.677224	9.679223	9.677
109	15							248	677257	679257	677
110	30							249	677291	679291	677
111	45							250	677324	679324	677
112	0							251	9.677358	9.679357	9.677
113	15							252	677391	679391	677
114	30							253	677424	679424	677
115	45							254	677457	679457	677
116	0							255	9.677491	9.679490	9.677
117	15							256	677524	679524	677
118	30							257	677557	679557	677
119	45							258	677591	679591	677
120	0							259	9.677624	9.679623	9.677
121	15							260	677657	679657	677
122	30							261	677691	679691	677
123	45							262	677724	679724	677
124	0							263	9.677758	9.679757	9.677
125	15							264	677791	679791	677
126	30							265	677824	679824	677
127	45							266	677857	679857	677
128	0							267	9.677891	9.679890	9.677
129	15							268	677924	679924	677
130	30							269	677957	679957	677
131	45							270	677991	679991	677
132	0							271	9.678024	9.680023	9.677
133	15							272	678057	680057	677
134	30							273	678091	680091	677
135	45							274	678124	680124	677
136	0										

	53 ^m	54 ^m	55 ^m	56 ^m	57 ^m	58 ^m	59 ^m
	88 deg.			89 deg.			
	01	30'	45'	0'	15'	30'	45'
1	687430	687430	687430	691324	691324	691324	691324
2	687433	687433	687433	691327	691327	691327	691327
3	687436	687436	687436	691330	691330	691330	691330
4	687439	687439	687439	691333	691333	691333	691333
5	687442	687442	687442	691336	691336	691336	691336
6	687445	687445	687445	691339	691339	691339	691339
7	687448	687448	687448	691342	691342	691342	691342
8	687451	687451	687451	691345	691345	691345	691345
9	687454	687454	687454	691348	691348	691348	691348
10	687457	687457	687457	691351	691351	691351	691351
11	687460	687460	687460	691354	691354	691354	691354
12	687463	687463	687463	691357	691357	691357	691357
13	687466	687466	687466	691360	691360	691360	691360
14	687469	687469	687469	691363	691363	691363	691363
15	687472	687472	687472	691366	691366	691366	691366
16	687475	687475	687475	691369	691369	691369	691369
17	687478	687478	687478	691372	691372	691372	691372
18	687481	687481	687481	691375	691375	691375	691375
19	687484	687484	687484	691378	691378	691378	691378
20	687487	687487	687487	691381	691381	691381	691381
21	687490	687490	687490	691384	691384	691384	691384
22	687493	687493	687493	691387	691387	691387	691387
23	687496	687496	687496	691390	691390	691390	691390
24	687499	687499	687499	691393	691393	691393	691393
25	687502	687502	687502	691396	691396	691396	691396
26	687505	687505	687505	691399	691399	691399	691399
27	687508	687508	687508	691402	691402	691402	691402
28	687511	687511	687511	691405	691405	691405	691405
29	687514	687514	687514	691408	691408	691408	691408
30	687517	687517	687517	691411	691411	691411	691411
31	687520	687520	687520	691414	691414	691414	691414
32	687523	687523	687523	691417	691417	691417	691417
33	687526	687526	687526	691420	691420	691420	691420
34	687529	687529	687529	691423	691423	691423	691423
35	687532	687532	687532	691426	691426	691426	691426
36	687535	687535	687535	691429	691429	691429	691429
37	687538	687538	687538	691432	691432	691432	691432
38	687541	687541	687541	691435	691435	691435	691435
39	687544	687544	687544	691438	691438	691438	691438
40	687547	687547	687547	691441	691441	691441	691441
41	687550	687550	687550	691444	691444	691444	691444
42	687553	687553	687553	691447	691447	691447	691447
43	687556	687556	687556	691450	691450	691450	691450
44	687559	687559	687559	691453	691453	691453	691453
45	687562	687562	687562	691456	691456	691456	691456
46	687565	687565	687565	691459	691459	691459	691459
47	687568	687568	687568	691462	691462	691462	691462
48	687571	687571	687571	691465	691465	691465	691465
49	687574	687574	687574	691468	691468	691468	691468
50	687577	687577	687577	691471	691471	691471	691471
51	687580	687580	687580	691474	691474	691474	691474
52	687583	687583	687583	691477	691477	691477	691477
53	687586	687586	687586	691480	691480	691480	691480
54	687589	687589	687589	691483	691483	691483	691483
55	687592	687592	687592	691486	691486	691486	691486
56	687595	687595	687595	691489	691489	691489	691489
57	687598	687598	687598	691492	691492	691492	691492
58	687601	687601	687601	691495	691495	691495	691495
59	687604	687604	687604	691498	691498	691498	691498
60	687607	687607	687607	691501	691501	691501	691501
61	687610	687610	687610	691504	691504	691504	691504
62	687613	687613	687613	691507	691507	691507	691507
63	687616	687616	687616	691510	691510	691510	691510
64	687619	687619	687619	691513	691513	691513	691513
65	687622	687622	687622	691516	691516	691516	691516
66	687625	687625	687625	691519	691519	691519	691519
67	687628	687628	687628	691522	691522	691522	691522
68	687631	687631	687631	691525	691525	691525	691525
69	687634	687634	687634	691528	691528	691528	691528
70	687637	687637	687637	691531	691531	691531	691531
71	687640	687640	687640	691534	691534	691534	691534
72	687643	687643	687643	691537	691537	691537	691537
73	687646	687646	687646	691540	691540	691540	691540
74	687649	687649	687649	691543	691543	691543	691543
75	687652	687652	687652	691546	691546	691546	691546
76	687655	687655	687655	691549	691549	691549	691549
77	687658	687658	687658	691552	691552	691552	691552
78	687661	687661	687661	691555	691555	691555	691555
79	687664	687664	687664	691558	691558	691558	691558
80	687667	687667	687667	691561	691561	691561	691561
81	687670	687670	687670	691564	691564	691564	691564
82	687673	687673	687673	691567	691567	691567	691567
83	687676	687676	687676	691570	691570	691570	691570
84	687679	687679	687679	691573	691573	691573	691573
85	687682	687682	687682	691576	691576	691576	691576
86	687685	687685	687685	691579	691579	691579	691579
87	687688	687688	687688	691582	691582	691582	691582
88	687691	687691	687691	691585	691585	691585	691585
89	687694	687694	687694	691588	691588	691588	691588
90	687697	687697	687697	691591	691591	691591	691591
91	687700	687700	687700	691594	691594	691594	691594
92	687703	687703	687703	691597	691597	691597	691597
93	687706	687706	687706	691600	691600	691600	691600
94	687709	687709	687709	691603	691603	691603	691603
95	687712	687712	687712	691606	691606	691606	691606
96	687715	687715	687715	691609	691609	691609	691609
97	687718	687718	687718	691612	691612	691612	691612
98	687721	687721	687721	691615	691615	691615	691615
99	687724	687724	687724	691618	691618	691618	691618
100	687727	687727	687727	691621	691621	691621	691621
101	687730	687730	687730	691624	691624	691624	691624
102	687733	687733	687733	691627	691627	691627	691627
103	687736	687736	687736	691630	691630	691630	691630
104	687739	687739	687739	691633	691633	691633	691633
105	687742	687742	687742	691636	691636	691636	691636
106	687745	687745	687745	691639	691639	691639	691639
107	687748	687748	687748	691642	691642	691642	691642
108	687751	687751	687751	691645	691645	691645	691645
109	687754	687754	687754	691648	691648	691648	691648
110	687757	687757	687757	691651	691651	691651	691651
111	687760	687760	687760	691654	691654	691654	691654
112	687763	687763	687763	691657	691657	691657	691657
113	687766	687766	687766	691660	691660	691660	691660
114	687769	687769	687769	691663	691663	691663	691663
115	687772	687772	687772	691666	691666	691666	691666
116	687775	687775	687775	691669	691669	691669	691669
117	687778	687778	687778	691672	691672	691672	691672
118	687781	687781	687781	691675	691675	691675	691675
119	687784	687784	687784	691678	691678	691678	691678
120	687787	687787	687787	691681	691681	691681	691681
121	687790	687790	687790	691684	691684	691684	691684
122	687793	687793	687793	691687	691687	691687	691687
123	687796	687796	687796	691690	691690	691690	691690
124	687799	687799	687799	691693	691693	691693	691693
125	687802	687802	687802	691696	691696	691696	691696
126	687805	687805	687805	691699	691699	691699	691699
127	687808	687808	687808	691702	691702	691702	691702
128	687811	687811	687811	691705	691705	691705	691705
129	687814	687814	687814	691708	691708	691708	691708
130	687817	687817	687817	691711	691711	691711	691711
131	687820	687820	687820	691714	691714	691714	691714
132	687823	687823	687823	691717	691717	691717	691717
133	687826	687826	687826	691720	691720	691720	691720
134	687829	687829	687829	691723			

	20"	21"	22"	23"	24"	25"	26"	27"	28"
	65 deg.				66 deg.				67 de
0	9.460433	9.463409	9.466354	9.469293	9.472218	9.475129	9.478026	9.480909	9.483779
1	13	460483	463450	466403	469341	472266	475177	478074	480957
2	30	460532	463499	466452	469390	472313	475225	478122	481005
3	45	460582	463548	466501	469439	472363	475274	478170	481053
4	0	9.460631	9.463598	9.466550	9.469488	9.472412	9.475322	9.478218	9.481101
5	15	460681	463647	466599	469537	472461	475371	478267	481149
6	30	460730	463696	466648	469586	472509	475419	478315	481197
7	45	460780	463746	466697	469635	472558	475467	478363	481245
8	0	9.460830	9.463795	9.466746	9.469683	9.472606	9.475516	9.478411	9.481293
9	15	460879	463844	466795	469732	472655	475564	478459	481341
10	30	460929	463894	466844	469781	472704	475612	478507	481388
11	45	460978	463943	466893	469830	472752	475661	478555	481436
12	0	9.461028	9.463992	9.466942	9.469879	9.472801	9.475709	9.478604	9.481484
13	15	461077	464041	466991	469927	472849	475757	478652	481532
14	30	461127	464091	467041	469976	472898	475806	478700	481580
15	45	461176	464140	467090	470025	472947	475854	478748	481628
16	0	9.461226	9.464189	9.467139	9.470074	9.472995	9.475903	9.478796	9.481676
17	15	461275	464238	467188	470123	473044	475951	478844	481724
18	30	461325	464288	467237	470172	473092	475999	478892	481772
19	45	461374	464337	467286	470220	473141	476047	478940	481819
20	0	9.461424	9.464386	9.467335	9.470269	9.473189	9.476096	9.478985	9.481867
21	15	461473	464436	467384	470318	473238	476144	479037	481915
22	30	461523	464485	467433	470367	473287	476192	479085	481963
23	45	461572	464534	467482	470415	473335	476241	479133	482011
24	0	9.461622	9.464585	9.467531	9.470464	9.473384	9.476289	9.479181	9.482059
25	15	461671	464633	467580	470513	473432	476337	479229	482107
26	30	461721	464682	467629	470562	473481	476386	479277	482154
27	45	461770	464731	467678	470610	473529	476434	479325	482202
28	0	9.461820	9.464780	9.467727	9.470659	9.473578	9.476482	9.479373	9.482250
29	15	461869	464829	467776	470708	473626	476531	479421	482298
30	30	461919	464879	467825	470757	473675	476579	479469	482346
31	45	461968	464928	467874	470805	473723	476627	479517	482394
32	0	9.462017	9.464977	9.467923	9.470854	9.473772	9.476675	9.479565	9.482441
33	15	462067	465026	467972	470903	473820	476724	479613	482489
34	30	462116	465076	468021	470952	473869	476772	479661	482537
35	45	462166	465125	468070	471000	473917	476820	479709	482585
36	0	9.462215	9.465174	9.468119	9.471049	9.473966	9.476869	9.479757	9.482633
37	15	462265	465223	468168	471098	474014	476917	479806	482681
38	30	462314	465272	468217	471147	474064	476965	479854	482729
39	45	462363	465321	468265	471195	474111	477013	479902	482777
40	0	9.462411	9.465371	9.468314	9.471244	9.474160	9.477062	9.479950	9.482824
41	15	462462	465420	468363	471293	474208	477110	479998	482872
42	30	462512	465469	468412	471342	474257	477158	480046	482919
43	45	462561	465518	468462	471390	474305	477206	480094	482967
44	0	9.462611	9.465567	9.468510	9.471439	9.474354	9.477255	9.480142	9.483015
45	15	462660	465617	468559	471488	474402	477303	480190	483063
46	30	462709	465666	468608	471536	474451	477351	480238	483111
47	45	462759	465715	468657	471585	474499	477399	480286	483158
48	0	9.462809	9.465764	9.468706	9.471634	9.474547	9.477447	9.480334	9.483206
49	15	462857	465813	468755	471682	474596	477496	480382	483254
50	30	462907	465862	468804	471731	474644	477544	480430	483302
51	45	462956	465911	468853	471780	474693	477592	480478	483349
52	0	9.463006	9.465961	9.468901	9.471828	9.474741	9.477640	9.480526	9.483397
53	15	463055	466010	468950	471877	474790	477688	480574	483445
54	30	463104	466059	468999	471926	474838	477737	480621	483493
55	45	463154	466108	469048	471974	474886	477785	480669	483540
56	0	9.463203	9.466157	9.469097	9.472023	9.474935	9.477833	9.480717	9.483585
57	15	463252	466206	469146	472072	474983	477881	480765	483633
58	30	463301	466255	469195	472120	475032	477929	480813	483681
59	45	463351	466304	469244	472169	475080	477976	480861	483731
60	0	9.463400	9.466354	9.469293	9.472218	9.475129	9.478026	9.480909	9.483779
61	15	463450	466403	469341	472266	475177	478074	480957	483827
62	30	463499	466452	469390	472313	475225	478122	481005	483874
63	45	463548	466501	469439	472363	475274	478170	481053	483922
64	0	9.463598	9.466550	9.469488	9.472412	9.475322	9.478218	9.481101	9.483970
65	15	463647	466599	469537	472461	475371	478267	481149	484018
66	30	463696	466648	469586	472509	475419	478315	481197	484065
67	45	463746	466697	469635	472558	475467	478363	481245	484113
68	0	9.463795	9.466746	9.469683	9.472606	9.475516	9.478411	9.481293	9.484161
69	15	463844	466795	469732	472655	475564	478459	481341	484208
70	30	463894	466844	469781	472704	475612	478507	481388	484256
71	45	463943	466893	469830	472752	475661	478555	481436	484304
72	0	9.463992	9.466942	9.469879	9.472801	9.475709	9.478604	9.481484	9.484351
73	15	464041	466991	469927	472849	475757	478652	481532	9.484399
74	30	464091	467041	469976	472898	475806	478700	481580	484447
75	45	464140	467090	470025	472947	475854	478748	481628	484494
76	0	9.464189	9.467139	9.470074	9.472995	9.475903	9.478796	9.481676	9.484542
77	15	464238	467188	470123	473044	475951	478844	481724	484590
78	30	464288	467237	470172	473092	475999	478892	481772	484637
79	45	464337	467286	470220	473141	476047	478940	481819	484685
80	0	9.464386	9.467335	9.470269	9.473189	9.476096	9.478985	9.481867	9.484733
81	15	464436	467384	470318	473238	476144	479037	481915	484780
82	30	464485	467433	470367	473287	476192	479085	481963	484828
83	45	464534	467482	470415	473335	476241	479133	482011	484875
84	0	9.464585	9.467531	9.470464	9.473384	9.476289	9.479181	9.482059	9.484923
85	15	464633	467580	470513	473432	476337	479229	482107	484971
86	30	464682	467629	470562	473481	476386	479277	482154	485018
87	45	464731	467678	470610	473529	476434	479325	482202	485066
88	0	9.464780	9.467727	9.470659	9.473578	9.476482	9.479373	9.482250	9.485113
89	15	464829	467776	470708	473626	476531	479421	482298	485161
90	30	464879	467825	470757	473675	476579	479469	482346	485209
91	45	464928	467874	470805	473723	476627	479517	482394	485256
92	0	9.464977	9.467923	9.470854	9.473772	9.476675	9.479565	9.482441	9.485304
93	15	465026	467972	470903	473820	476724	479613	482489	485352
94	30	465076	468021	470952	473869	476772	479661	482537	485399
95	45	465125	468070	471000	473917	476820	479709	482585	485447
96	0	9.465174	9.468119	9.471049	9.473966	9.476869	9.479757	9.482633	9.485494
97	15	465223	468168	471098	474014	476917	479806	482681	485542
98	30	465272	468217	471147	474064	476965	479854	482729	485589
99	45	465321	468265	471195	474111	477013	479902	482777	485637
100	0	9.465371	9.468314	9.471244	9.474160	9.477062	9.479950	9.482824	9.485685
101	15	465420	468363	471293	474208	477110	479998	482872	9.485732
102	30	465469	468412	471342	474257	477158	480046	482919	485780
103	45	465518	468462	471390	474305	477206	480094	482967	485827
104	0	9.465567	9.468510	9.471439	9.474354	9.477255	9.480142	9.483015	9.485875
105	15	465617	468559	471488	474402	477303	480190	483063	485922
106	30	465666	468608	471536	474451	477351	480238	483111	485970
107	45	465715	468657	471585	474499	477399	480286	483158	486017

30"	31"	32"	33"	34"	35"	36"	37"	38"	39"
67 deg.	68 deg.					69 deg.			
9.489478	9.492307	9.495123	9.497926	9.500716	9.503492	9.506256	9.509007	9.511745	9.514470
489525	492314	495170	497978	500752	503538	506302	509053	511790	514515
489572	492401	495217	498019	500809	503585	506348	509098	511836	514561
489620	492448	495264	498066	500855	503631	506394	509144	511881	514606
9.489667	9.492495	9.495311	9.498112	9.500901	9.503677	9.506440	9.509190	9.511927	9.514651
489714	492542	495257	498159	500948	503723	506486	509235	511972	514697
489761	492589	495304	498206	500994	503769	506532	509281	512018	514742
489809	492636	495351	498252	501040	503815	506578	509327	512063	514787
9.489856	9.492684	9.495498	9.498299	9.501087	9.503862	9.506624	9.509373	9.512109	9.514832
489903	492730	495544	498346	501133	503908	506669	509418	512154	514878
489950	492776	495591	498392	501179	503954	506715	509464	512200	514923
489999	492824	495638	498438	501226	504000	506761	509510	512245	514968
9.490045	9.492872	9.495685	9.498485	9.501272	9.504046	9.506807	9.509555	9.512291	9.515014
490092	492919	495732	498532	501318	504092	506853	509601	512336	515059
490139	492966	495778	498578	501365	504138	506899	509647	512382	515104
490186	493012	495825	498625	501411	504184	506945	509692	512427	515149
9.490234	9.493060	9.495872	9.498671	9.501457	9.504231	9.506991	9.509738	9.512473	9.515195
490281	493107	495919	498719	501504	504277	507037	509784	512518	515240
490328	493153	495966	498764	501550	504323	507083	509830	512564	515285
490375	493200	496012	498811	501596	504369	507128	509875	512609	515330
9.490423	9.493247	9.496059	9.498857	9.501643	9.504415	9.507174	9.509921	9.512655	9.515376
490470	493294	496106	498904	501689	504461	507220	509967	512700	515421
490517	493341	496153	498951	501735	504507	507266	510012	512746	515466
490564	493388	496199	498997	501782	504553	507312	510058	512791	515511
9.490611	9.493435	9.496246	9.499044	9.501828	9.504599	9.507358	9.510104	9.512836	9.515557
490658	493482	496293	499090	501874	504645	507404	510149	512882	515602
490706	493529	496339	499137	501921	504692	507450	510195	512927	515647
490753	493576	496386	499183	501967	504738	507495	510240	512973	515692
9.490800	9.493623	9.496433	9.499230	9.502013	9.504784	9.507541	9.510286	9.513016	9.515737
490847	493670	496480	499276	502059	504830	507587	510332	513064	515783
490894	493717	496526	499323	502106	504876	507633	510377	513109	515828
490941	493764	496573	499369	502152	504922	507679	510423	513154	515873
9.490989	9.493811	9.496620	9.499416	9.502198	9.504968	9.507725	9.510469	9.513200	9.515918
491036	493858	496666	499462	502244	505014	507771	510514	513245	515963
491083	493905	496713	499509	502291	505060	507816	510560	513291	516009
491130	493951	496760	499555	502337	505106	507862	510605	513336	516054
9.491177	9.493998	9.496807	9.499601	9.502383	9.505152	9.507908	9.510651	9.513381	9.516099
491224	494045	496853	499648	502429	505198	507954	510697	513427	516144
491271	494092	496900	499694	502476	505244	508000	510742	513472	516189
491318	494139	496947	499741	502522	505290	508045	510788	513518	516235
9.491366	9.494186	9.496993	9.499787	9.502568	9.505336	9.508091	9.510834	9.513563	9.516280
491413	494233	497040	499834	502614	505382	508137	510879	513608	516325
491460	494280	497087	499880	502661	505428	508183	510923	513654	516370
491507	494327	497133	499927	502707	505474	508229	510970	513699	516415
9.491554	9.494374	9.497180	9.499973	9.502753	9.505520	9.508275	9.511016	9.513745	9.516460
491601	494420	497227	500019	502799	505566	508320	511061	513790	516506
491648	494467	497273	500066	502846	505612	508366	511107	513835	516551
491695	494514	497320	500112	502892	505658	508412	511153	513881	516596
9.491742	9.494561	9.497367	9.500159	9.502938	9.505704	9.508458	9.511198	9.513926	9.516641
491789	494608	497413	500205	502984	505750	508503	511244	513971	516686
491837	494655	497460	500252	503031	505796	508549	511289	514017	516731
491884	494702	497516	500298	503077	505842	508595	511335	514062	516777
9.491931	9.494749	9.497553	9.500345	9.503123	9.505885	9.508641	9.511380	9.514107	9.516822
491978	494795	497600	500391	503169	505934	508687	511426	514153	516868
492025	494842	497646	500437	503215	505980	508732	511472	514198	516912
492072	494889	497693	500484	503261	506026	508778	511517	514243	516957
9.492119	9.494936	9.497740	9.500530	9.503308	9.506072	9.508824	9.511563	9.514289	9.517002
492166	494983	497786	500577	503354	506118	508870	511608	514334	517047
492213	495030	497833	500623	503400	506164	508915	511654	514379	517092
492260	495076	497879	500669	503446	506210	508961	511699	514425	517137
9.492307	9.495123	9.497926	9.500716	9.503492	9.506256	9.509007	9.511745	9.514470	9.517183
29"	28"	27"	26"	25"	24"	23"	22"	21"	20"

	40"	41"	42"	43"	44"	45"	46"	47"	48"
	70 deg.				71 deg.				72 d.
0	9.517183	9.519883	9.523570	9.525245	9.527906	9.530559	9.533197	9.535823	9.538437
15	517229	519928	522615	525290	527952	530603	533241	535867	538481
30	517273	519972	522660	525334	527997	530647	533285	535911	538524
45	517318	520017	522704	525379	528041	530691	533326	535954	538568
1	517363	520062	522749	525423	528085	530735	533372	535998	538611
15	517408	520107	522794	525468	528129	530779	533416	536041	538655
30	517453	520152	522838	525512	528174	530823	533460	536085	538698
45	517498	520197	522883	525557	528218	530867	533504	536129	538741
2	517543	520242	522928	525601	528262	530911	533548	536172	538785
15	517588	520287	522972	525645	528306	530955	533592	536216	538828
30	517633	520331	523017	525689	528351	530999	533635	536260	538872
45	517679	520376	523062	525734	528395	531043	533679	536303	538915
3	517724	520421	523106	525779	528439	531087	533723	536347	538959
15	517769	520466	523151	525823	528483	531131	533767	536391	539003
30	517814	520511	523195	525868	528528	531175	533811	536434	539046
45	517859	520556	523240	525912	528572	531219	533855	536478	539089
4	517904	520601	523285	525957	528616	531263	533898	536521	539132
15	517949	520645	523329	526001	528660	531307	533942	536565	539176
30	517994	520690	523374	526045	528705	531351	533986	536609	539219
45	518039	520735	523419	526089	528749	531395	534030	536652	539263
5	518084	520780	523463	526134	528793	531439	534074	536696	539306
15	518129	520825	523508	526179	528837	531483	534117	536739	539349
30	518174	520870	523552	526223	528881	531527	534161	536783	539393
45	518219	520914	523597	526267	528926	531571	534205	536827	539436
6	518264	520959	523642	526312	528970	531615	534249	536870	539479
15	518309	521004	523686	526356	529014	531659	534293	536914	539523
30	518354	521049	523731	526401	529058	531703	534336	536957	539566
45	518399	521094	523775	526445	529102	531747	534380	537001	539610
7	518444	521138	523820	526489	529147	531791	534424	537045	539653
15	518489	521183	523865	526534	529191	531835	534468	537089	539697
30	518534	521228	523909	526578	529235	531879	534512	537133	539740
45	518579	521273	523954	526623	529279	531923	534555	537175	539783
8	518624	521318	523998	526667	529323	531967	534599	537219	539827
15	518669	521362	524043	526711	529367	532011	534643	537262	539870
30	518714	521407	524088	526756	529412	532055	534687	537306	539913
45	518759	521452	524132	526800	529456	532099	534730	537349	539957
9	518804	521497	524177	526844	529500	532143	534774	537393	540000
15	518849	521541	524221	526889	529544	532187	534818	537437	540043
30	518894	521586	524266	526933	529588	532231	534862	537480	540087
45	518939	521631	524310	526977	529632	532275	534905	537524	540130
10	518984	521676	524355	527022	529676	532319	534949	537567	540174
15	519029	521720	524399	527066	529721	532363	534993	537611	540217
30	519074	521765	524444	527111	529765	532407	535037	537654	540260
45	519119	521810	524489	527155	529809	532451	535080	537698	540303
11	519164	521855	524533	527199	529853	532495	535124	537741	540347
15	519209	521899	524578	527243	529897	532539	535168	537785	540390
30	519254	521944	524622	527288	529941	532582	535211	537828	540433
45	519299	521989	524667	527332	529985	532626	535255	537872	540477
12	519344	522034	524711	527376	530029	532670	535299	537915	540520
15	519389	522078	524756	527421	530074	532714	535343	537959	540563
30	519433	522123	524800	527465	530118	532758	535386	538003	540607
45	519478	522168	524845	527509	530162	532802	535430	538046	540650
13	519523	522213	524889	527554	530206	532846	535474	538090	540693
15	519568	522257	524934	527598	530250	532890	535517	538133	540737
30	519613	522302	524978	527642	530294	532934	535561	538176	540780
45	519658	522347	525023	527687	530338	532977	535605	538220	540823
14	519703	522391	525067	527731	530382	533021	535648	538263	540866
15	519748	522436	525112	527775	530426	533065	535692	538307	540910
30	519793	522481	525156	527820	530470	533109	535736	538350	540953
45	519838	522525	525201	527864	530514	533153	535779	538394	540997
15	519883	522570	525245	527908	530559	533197	535823	538437	541040
15	19"	18"	17"	16"	15"	14"	13"	12"	11"

1000

Log. Haversina. (t)

4 Hours.

10"	51"	52"	53"	54"	55"	56"	57"	58"	59"
72 deg.	73 deg.					74 deg.			
543630	546209	548775	551330	553874	556406	558926	561435	563933	566419
543637	546215	548781	551337	553881	556413	558933	561442	563940	566426
543644	546222	548788	551344	553888	556420	558940	561449	563947	566433
543651	546229	548795	551351	553895	556427	558947	561456	563954	566440
543658	546236	548802	551358	553902	556434	558954	561463	563961	566447
543665	546243	548809	551365	553909	556441	558961	561470	563968	566454
543672	546250	548816	551372	553916	556448	558968	561477	563975	566461
543679	546257	548823	551379	553923	556455	558975	561484	563982	566468
543686	546264	548830	551386	553930	556462	558982	561491	563989	566475
543693	546271	548837	551393	553937	556469	558989	561498	563996	566482
543700	546278	548844	551400	553944	556476	558996	561505	564003	566489
543707	546285	548851	551407	553951	556483	559003	561512	564010	566496
543714	546292	548858	551414	553958	556490	559010	561519	564017	566503
543721	546299	548865	551421	553965	556497	559017	561526	564024	566510
543728	546306	548872	551428	553972	556504	559024	561533	564031	566517
543735	546313	548879	551435	553979	556511	559031	561540	564038	566524
543742	546320	548886	551442	553986	556518	559038	561547	564045	566531
543749	546327	548893	551449	553993	556525	559045	561554	564052	566538
543756	546334	548900	551456	554000	556532	559052	561561	564059	566545
543763	546341	548907	551463	554007	556539	559059	561568	564066	566552
543770	546348	548914	551470	554014	556546	559066	561575	564073	566559
543777	546355	548921	551477	554021	556553	559073	561582	564080	566566
543784	546362	548928	551484	554028	556560	559080	561589	564087	566573
543791	546369	548935	551491	554035	556567	559087	561596	564094	566580
543798	546376	548942	551498	554042	556574	559094	561603	564101	566587
543805	546383	548949	551505	554049	556581	559101	561610	564108	566594
543812	546390	548956	551512	554056	556588	559108	561617	564115	566601
543819	546397	548963	551519	554063	556595	559115	561624	564122	566608
543826	546404	548970	551526	554070	556602	559122	561631	564129	566615
543833	546411	548977	551533	554077	556609	559129	561638	564136	566622
543840	546418	548984	551540	554084	556616	559136	561645	564143	566629
543847	546425	548991	551547	554091	556623	559143	561652	564150	566636
543854	546432	548998	551554	554098	556630	559150	561659	564157	566643
543861	546439	549005	551561	554105	556637	559157	561666	564164	566650
543868	546446	549012	551568	554112	556644	559164	561673	564171	566657
543875	546453	549019	551575	554119	556651	559171	561680	564178	566664
543882	546460	549026	551582	554126	556658	559178	561687	564185	566671
543889	546467	549033	551589	554133	556665	559185	561694	564192	566678
543896	546474	549040	551596	554140	556672	559192	561701	564199	566685
543903	546481	549047	551603	554147	556679	559199	561708	564206	566692
543910	546488	549054	551610	554154	556686	559206	561715	564213	566699
543917	546495	549061	551617	554161	556693	559213	561722	564220	566706
543924	546502	549068	551624	554168	556700	559220	561729	564227	566713
543931	546509	549075	551631	554175	556707	559227	561736	564234	566720
543938	546516	549082	551638	554182	556714	559234	561743	564241	566727
543945	546523	549089	551645	554189	556721	559241	561750	564248	566734
543952	546530	549096	551652	554196	556728	559248	561757	564255	566741
543959	546537	549103	551659	554203	556735	559255	561764	564262	566748
543966	546544	549110	551666	554210	556742	559262	561771	564269	566755
543973	546551	549117	551673	554217	556749	559269	561778	564276	566762
543980	546558	549124	551680	554224	556756	559276	561785	564283	566769
543987	546565	549131	551687	554231	556763	559283	561792	564290	566776
543994	546572	549138	551694	554238	556770	559290	561799	564297	566783
543999	546577	549143	551699	554243	556775	559295	561804	564302	566788
544004	546582	549148	551704	554248	556780	559300	561809	564307	566793
544009	546587	549153	551709	554253	556785	559305	561814	564312	566798
544014	546592	549158	551714	554258	556790	559310	561819	564317	566803
544019	546597	549163	551719	554263	556795	559315	561824	564322	566808
544024	546602	549168	551724	554268	556800	559320	561829	564327	566813
544029	546607	549173	551729	554273	556805	559325	561834	564332	566818
544034	546612	549178	551734	554278	556810	559330	561839	564337	566823
544039	546617	549183	551739	554283	556815	559335	561844	564342	566828
544044	546622	549188	551744	554288	556820	559340	561849	564347	566833
544049	546627	549193	551749	554293	556825	559345	561854	564352	566838
544054	546632	549198	551754	554298	556830	559350	561859	564357	566843
544059	546637	549203	551759	554303	556835	559355	561864	564362	566848
544064	546642	549208	551764	554308	556840	559360	561869	564367	566853
544069	546647	549213	551769	554313	556845	559365	561874	564372	566858
544074	546652	549218	551774	554318	556850	559370	561879	564377	566863
544079	546657	549223	551779	554323	556855	559375	561884	564382	566868
544084	546662	549228	551784	554328	556860	559380	561889	564387	566873
544089	546667	549233	551789	554333	556865	559385	561894	564392	566878
544094	546672	549238	551794	554338	556870	559390	561899	564397	566883
544099	546677	549243	551799	554343	556875	559395	561904	564402	566888
544104	546682	549248	551804	554348	556880	559400	561909	564407	566893
544109	546687	549253	551809	554353	556885	559405	561914	564412	566898
544114	546692	549258	551814	554358	556890	559410	561919	564417	566903
544119	546697	549263	551819	554363	556895	559415	561924	564422	566908
544124	546702	549268	551824	554368	556900	559420	561929	564427	566913
544129	546707	549273	551829	554373	556905	559425	561934	564432	566918
544134	546712	549278	551834	554378	556910	559430	561939	564437	566923
544139	546717	549283	551839	554383	556915	559435	561944	564442	566928
544144	546722	549288	551844	554388	556920	559440	561949	564447	566933
544149	546727	549293	551849	554393	556925	559445	561954	564452	566938
544154	546732	549298	551854	554398	556930	559450	561959	564457	566943
544159	546737	549303	551859	554403	556935	559455	561964	564462	566948
544164	546742	549308	551864	554408	556940	559460	561969	564467	566953
544169	546747	549313	551869	554413	556945	559465	561974	564472	566958
544174	546752	549318	551874	554418	556950	559470	561979	564477	566963
544179	546757	549323	551879	554423	556955	559475	561984	564482	566968
544184	546762	549328	551884	554428	556960	559480	561989	564487	566973
544189	546767	549333	551889	554433	556965	559485	561994	564492	566978
544194	546772	549338	551894	554438	556970	559490	562000	564497	566983
544199	546777	549343	551899	554443	556975	559495	562005	564502	566988
544204	546782	549348	551904	554448	556980	559500	562010	564507	566993
544209	546787	549353	551909	554453	556985	559505	562015	564512	567000
544214	546792	549358	551914	554458	556990	559510	562020	564517	567005
544219	546797	549363	551919	554463	556995	559515	562025	564522	567010
544224	546802	549368	551924	554468	557000	559520	562030	564527	567015
544229	546807	549373	551929	554473	557005	559525	562035	564532	567020
544234	546812	549378	551934	554478	557010	559530	562040	564537	567025
544239	546817	549383	551939	554483	557015	559535	562045	564542	567030
544244	546822	549388	551944	554488	557020	559540	562050	564547	567035
544249	546827	549393	551949	554493	557025	559545	562055	564552	

5 Hours.

Log. Havermine. (1)

	0 ^m	1 ^m	2 ^m	3 ^m	4 ^m	5 ^m	6 ^m	7 ^m
	75 deg.				76 deg.			
0	9.568894	9.571358	9.573911	9.576253	9.578684	9.581104	9.583513	9.585911
15	569035	571399	573852	576294	578724	581144	583553	585951
30	569177	571440	573893	576334	578765	581184	583593	585991
45	569318	571481	573933	576375	578805	581225	583633	586031
60	569459	571522	573974	576415	578846	581265	583673	586071
75	569600	571563	574015	576456	578886	581305	583713	586111
90	569741	571604	574056	576497	578926	581345	583753	586151
105	569882	571645	574097	576537	578967	581386	583793	586191
120	569923	571686	574137	576578	579007	581426	583834	586230
135	569965	571727	574178	576619	579048	581466	583873	586270
150	569906	571768	574219	576659	579088	581506	583914	586310
165	569947	571809	574260	576699	579128	581546	583954	586350
180	569988	571850	574300	576740	579169	581587	583994	586390
195	569929	571891	574341	576781	579209	581627	584034	586430
210	569970	571932	574382	576821	579250	581667	584074	586470
225	569911	571973	574423	576862	579290	581707	584114	586509
240	569952	572013	574463	576902	579330	581747	584154	586549
255	569993	572054	574504	576943	579371	581788	584194	586589
270	569934	572095	574545	576984	579411	581828	584234	586629
285	569975	572136	574586	577024	579451	581868	584274	586669
300	569916	572177	574626	577065	579492	581908	584314	586709
315	569957	572218	574667	577105	579532	581948	584354	586749
330	569998	572259	574708	577146	579573	581989	584394	586789
345	569939	572300	574748	577186	579613	582029	584434	586828
360	569980	572341	574789	577227	579653	582069	584474	586868
375	569921	572382	574830	577267	579694	582109	584514	586908
390	569962	572423	574871	577308	579734	582149	584554	586947
405	569903	572463	574911	577348	579774	582189	584594	586987
420	569844	572504	574952	577389	579815	582229	584634	587027
435	569885	572545	574993	577429	579855	582270	584674	587067
450	569826	572586	575033	577470	579895	582310	584714	587107
465	569867	572627	575074	577510	579936	582350	584754	587146
480	569808	572668	575115	577551	579976	582390	584794	587186
495	569749	572709	575155	577591	580016	582430	584833	587226
510	569790	572750	575196	577632	580057	582470	584874	587266
525	569731	572790	575237	577672	580097	582511	584913	587306
540	569672	572831	575278	577713	580137	582551	584953	587345
555	569613	572872	575318	577753	580177	582591	584993	587385
570	569554	572913	575359	577794	580218	582631	585033	587425
585	569495	572954	575400	577834	580258	582671	585073	587465
600	569436	572995	575440	577875	580299	582711	585113	587504
615	569377	573036	575480	577915	580339	582751	585153	587544
630	569318	573076	575522	577956	580379	582792	585193	587584
645	569259	573117	575562	577996	580419	582832	585233	587624
660	569200	573158	575603	578037	580460	582872	585273	587663
675	569141	573199	575644	578077	580500	582912	585313	587703
690	569082	573240	575684	578118	580540	582952	585353	587743
705	569023	573281	575725	578158	580580	582992	585393	587783
720	568964	573321	575766	578199	580621	583032	585433	587822
735	568905	573362	575806	578239	580661	583072	585473	587862
750	568846	573403	575847	578280	580701	583112	585513	587902
765	568787	573444	575887	578320	580742	583152	585552	587942
780	568728	573485	575928	578360	580782	583193	585592	587981
795	568669	573525	575969	578401	580822	583233	585632	588021
810	568610	573566	576009	578441	580862	583273	585672	588061
825	568551	573607	576050	578482	580903	583313	585712	588101
840	568492	573648	576091	578522	580943	583353	585752	588140
855	568433	573689	576131	578563	580983	583393	585792	588180
870	568374	573730	576172	578603	581023	583433	585832	588220
885	568315	573770	576212	578643	581064	583473	585872	588259
900	568256	573811	576253	578684	581104	583513	585911	588299
915	568197	573852	576294	578724	581144	583553	585951	588339
930	568138	573893	576334	578765	581184	583593	585991	588379
945	568079	573933	576375	578805	581225	583633	586031	588419
960	568020	573974	576415	578846	581265	583673	586071	588459
975	567961	574015	576456	578886	581305	583713	586111	588499
990	567902	574056	576497	578926	581345	583753	586151	588539
1005	567843	574097	576537	578967	581386	583793	586191	588579
1020	567784	574137	576578	579007	581426	583834	586230	588619
1035	567725	574178	576619	579048	581466	583873	586270	588659
1050	567666	574219	576659	579088	581506	583914	586310	588699
1065	567607	574260	576699	579128	581546	583954	586350	588739
1080	567548	574300	576740	579169	581587	583994	586390	588779
1095	567489	574341	576781	579209	581627	584034	586430	588819
1110	567430	574382	576821	579250	581667	584074	586470	588859
1125	567371	574423	576862	579290	581707	584114	586509	588899
1140	567312	574463	576902	579330	581747	584154	586549	588939
1155	567253	574504	576943	579371	581788	584194	586589	588979
1170	567194	574545	576984	579411	581828	584234	586629	589019
1185	567135	574586	577024	579451	581868	584274	586669	589059
1200	567076	574626	577065	579492	581908	584314	586709	589099
1215	567017	574667	577105	579532	581948	584354	586749	589139
1230	566958	574708	577146	579573	581989	584394	586789	589179
1245	566899	574748	577186	579613	582029	584434	586828	589219
1260	566840	574789	577227	579653	582069	584474	586868	589259
1275	566781	574830	577267	579694	582109	584514	586908	589299
1290	566722	574871	577308	579734	582149	584554	586947	589339
1305	566663	574911	577348	579774	582189	584594	586987	589379
1320	566604	574952	577389	579815	582229	584634	587027	589419
1335	566545	574993	577429	579855	582270	584674	587067	589459
1350	566486	575033	577470	579895	582310	584714	587107	589499
1365	566427	575074	577510	579936	582350	584754	587146	589539
1380	566368	575115	577551	579976	582390	584794	587186	589579
1395	566309	575155	577591	580016	582430	584833	587226	589619
1410	566250	575196	577632	580057	582470	584874	587266	589659
1425	566191	575237	577672	580097	582511	584913	587306	589699
1440	566132	575278	577713	580137	582551	584953	587345	589739
1455	566073	575318	577753	580177	582591	584993	587385	589779
1470	566014	575359	577794	580218	582631	585033	587425	589819
1485	565955	575400	577834	580258	582671	585073	587465	589859
1500	565896	575440	577875	580299	582711	585113	587504	589899
1515	565837	575480	577915	580339	582751	585153	587544	589939
1530	565778	575522	577956	580379	582792	585193	587584	589979
1545	565719	575562	577996	580419	582832	585233	587624	590019
1560	565660	575603	578037	580460	582872	585273	587663	590059
1575	565601	575644	578077	580500	582912	585313	587703	590099
1590	565542	575684	578118	580540	582952	585353	587743	590139
1605	565483	575725	578158	580580	582992	585393	587783	590179
1620	565424	575766	578199	580621	583032	585433	587822	590219
1635	565365	575806	578239	580661	583072	585473	587862	590259
1650	565306	575847	578280	580701	583112	585513	587902	590299
1665	565247	575887	578320	580742	583152	585552	587942	590339
1680	565188	575928	578360	580782	583193	585592	587981	590379
1695	565129	575969	578401	580822	583233	585632	588021	590419
1710	565070	576009	578441	580862	583273	585672	588061	590459
1725	565011	576050	578482	580903	583313	585712	588101	590499
1740	564952	576091	578522	580943	583353	585752	588140	590539
1755	564893	576131	578563	580983	583393	585792	588180	590579

	11 ^m	12 ^m	13 ^m	14 ^m	15 ^m	16 ^m	17 ^m	18 ^m	19 ^m
deg.	78 deg.				79 deg.				
042 ⁴⁵	593398	597744	600078	602403	604717	607021	609315	611598	613872
083 ⁵⁹	59437	597783	600117	602442	604756	607059	609353	611636	613909
121 ⁵⁹	595477	597822	600156	602480	604794	607098	609391	611674	613947
160 ⁵⁹	595516	597861	600195	602519	604833	607136	609429	611712	613985
200 ⁴⁵	595555	597900	600234	602559	604871	607174	609467	611750	614023
239 ⁵⁹	595594	597939	600273	602596	604910	607213	609505	611788	614061
279 ⁵⁹	595633	597978	600311	602635	604948	607251	609544	611826	614098
318 ⁵⁹	595672	598017	600350	602673	604987	607289	609582	611864	614136
357 ⁴⁷	595712	598056	600389	602712	605025	607327	609620	611902	614171
396 ⁵⁹	595751	598095	600428	602751	605063	607366	609658	611940	614212
435 ⁵⁹	595790	598133	600467	602789	605102	607404	609696	611978	614250
473 ⁵⁹	595829	598172	600506	602828	605140	607442	609734	612016	614287
514 ⁴⁵	595868	598211	600544	602867	605179	607481	609772	612054	614325
554 ⁵⁹	595907	598250	600583	602905	605217	607519	609810	612092	614363
593 ⁵⁹	595946	598289	600622	602944	605256	607557	609848	612130	614401
632 ⁵⁹	595985	598328	600661	602983	605294	607595	609886	612167	614438
672 ⁴⁵	596025	598367	600699	603021	605333	607634	609925	612205	614476
711 ⁵⁹	596064	598406	600738	603059	605371	607672	609963	612243	614514
750 ⁵⁹	596103	598445	600777	603098	605409	607710	610001	612281	614552
789 ⁵⁹	596142	598484	600816	603137	605448	607748	610039	612319	614590
829 ⁵⁰	596181	598523	600854	603176	605486	607787	610077	612357	614627
868 ⁵⁹	596220	598562	600893	603215	605525	607825	610115	612395	614665
907 ⁵⁹	596259	598601	600932	603253	605563	607863	610153	612433	614703
947 ⁵⁹	596299	598640	600971	603291	605601	607901	610191	612471	614740
986 ⁵¹	596338	598679	601010	603330	605640	607940	610229	612509	614779
1025 ⁵⁹	596377	598718	601049	603368	605678	607978	610267	612547	614816
1065 ⁵⁹	596416	598757	601087	603407	605717	608016	610305	612585	614854
1104 ⁵⁹	596455	598796	601126	603446	605755	608054	610344	612622	614892
1143 ⁵⁰	596494	598835	601165	603484	605794	608093	610382	612660	614930
1182 ⁵⁹	596533	598873	601203	603523	605832	608131	610420	612698	614967
1221 ⁵⁹	596572	598912	601242	603561	605870	608169	610458	612736	615005
1261 ⁵⁹	596611	598951	601281	603600	605909	608207	610496	612774	615042
1300 ⁵³	596650	598990	601320	603638	605947	608246	610534	612812	615080
1339 ⁵⁹	596689	599029	601358	603677	605986	608284	610572	612850	615118
1379 ⁵⁹	596729	599068	601397	603716	606024	608322	610610	612888	615156
1418 ⁵⁹	596768	599107	601436	603754	606062	608360	610648	612926	615193
1457 ⁵⁴	596807	599146	601474	603793	606101	608398	610686	612963	615231
1496 ⁵⁹	596846	599185	601513	603831	606139	608436	610724	613001	615268
1536 ⁵⁹	596885	599224	601552	603870	606177	608475	610762	613039	615306
1575 ⁵⁹	596924	599262	601591	603908	606216	608513	610800	613077	615344
1614 ⁵³	596963	599301	601629	603947	606254	608551	610838	613115	615382
1653 ⁵⁹	597002	599340	601668	603985	606293	608589	610876	613153	615420
1693 ⁵⁹	597041	599379	601707	604024	606331	608628	610914	613191	615457
1732 ⁵⁹	597080	599418	601745	604063	606369	608666	610952	613228	615495
1771 ⁵⁰	597119	599457	601784	604101	606408	608704	610990	613266	615533
1810 ⁵⁹	597158	599496	601823	604140	606446	608742	611028	613304	615570
1850 ⁵⁹	597197	599535	601862	604178	606484	608780	611066	613342	615608
1889 ⁵⁹	597236	599573	601900	604217	606522	608818	611104	613380	615645
1928 ⁵⁷	597275	599612	601939	604255	606561	608857	611142	613418	615683
1967 ⁵⁹	597314	599651	601978	604294	606599	608895	611180	613456	615721
2006 ⁵⁹	597353	599690	602016	604332	606638	608933	611218	613493	615759
2046 ⁵⁹	597392	599729	602055	604371	606676	608971	611256	613531	615796
2085 ⁵⁰	597432	599768	602094	604409	606714	609009	611294	613569	615834
2124 ⁵⁹	597471	599807	602132	604448	606753	609048	611332	613607	615872
2163 ⁵⁹	597510	599845	602171	604486	606791	609086	611370	613645	615909
2202 ⁵⁹	597549	599884	602210	604525	606829	609124	611408	613683	615947
2242 ⁵⁰	597588	599923	602248	604563	606868	609162	611446	613720	615984
2281 ⁵⁹	597627	599962	602287	604602	606906	609200	611484	613758	616022
2320 ⁵⁹	597666	600001	602326	604640	606944	609238	611522	613796	616060
2359 ⁵⁹	597705	600040	602364	604679	606983	609277	611560	613834	616097
2398 ⁵⁹	597744	600078	602403	604717	607021	609315	611598	613872	616135
48 ^m	47 ^m	46 ^m	45 ^m	44 ^m	43 ^m	42 ^m	41 ^m	40 ^m	

	20"	21"	22"	23"	24"	25"	26"	27"	28"
	80 deg.				81 deg.				82
0	9.616135	9.618388	9.620632	9.622865	9.625089	9.627303	9.629507	9.631701	9.633888
1	13 616173	616426	620669	622902	625126	627339	629533	631738	633928
2	30 616210	618463	620706	622939	625163	627376	629580	631774	633956
3	45 616248	618501	620744	622977	625199	627413	629617	631811	633992
4	0 9.616286	9.618538	9.620781	9.623014	9.625237	9.627450	9.629653	9.631847	9.634031
5	15 616323	618576	620818	623051	625274	627487	629690	631884	634063
6	30 616361	618613	620856	623088	625311	627524	629727	631920	634100
7	45 616399	618650	620893	623125	625348	627561	629763	631956	634140
8	0 9.616436	9.618688	9.620930	9.623162	9.625385	9.627597	9.629800	9.631993	9.634174
9	15 616474	618725	620967	623199	625421	627634	629836	632029	634211
10	30 616511	618763	621005	623236	625458	627671	629873	632066	634245
11	45 616548	618800	621042	623274	625495	627707	629910	632102	634282
12	0 9.616586	9.618838	9.621079	9.623311	9.625532	9.627744	9.629946	9.632139	9.634323
13	15 616624	618875	621116	623344	625569	627781	629983	632175	634356
14	30 616662	618913	621154	623385	625606	627818	630020	632212	634394
15	45 616699	618950	621191	623422	625643	627855	630056	632248	634433
16	0 9.616737	9.618988	9.621228	9.623459	9.625680	9.627891	9.630093	9.632285	9.634467
17	15 616774	619025	621265	623496	625717	627928	630129	632321	634500
18	30 616812	619062	621303	623533	625754	627965	630166	632358	634538
19	45 616850	619100	621340	623570	625791	628002	630203	632394	634571
20	0 9.616887	9.619137	9.621377	9.623608	9.625829	9.628038	9.630239	9.632430	9.634611
21	15 616925	619175	621414	623644	625865	628075	630276	632467	634648
22	30 616962	619212	621452	623682	625902	628112	630312	632503	634688
23	45 617000	619249	621489	623719	625939	628149	630349	632540	634727
24	0 9.617038	9.619287	9.621526	9.623756	9.625976	9.628185	9.630386	9.632576	9.634751
25	15 617075	619324	621563	623793	626012	628222	630422	632613	634791
26	30 617113	619362	621601	623830	626049	628259	630459	632649	634831
27	45 617150	619399	621638	623867	626086	628296	630495	632685	634864
28	0 9.617188	9.619436	9.621675	9.623904	9.626123	9.628332	9.630532	9.632722	9.634902
29	15 617225	619474	621712	623941	626160	628369	630569	632758	9.634931
30	30 617263	619511	621750	623978	626197	628406	630605	632795	634971
31	45 617301	619549	621787	624015	626234	628443	630642	632831	635011
32	0 9.617338	9.619586	9.621824	9.624052	9.626271	9.628479	9.630678	9.632867	9.63504
33	15 617375	619623	621861	624089	626308	628516	630715	632904	63508
34	30 617413	619661	621899	624126	626345	628553	630751	632940	635121
35	45 617451	619698	621936	624163	626382	628590	630788	632977	635151
36	0 9.617488	9.619736	9.621973	9.624201	9.626418	9.628626	9.630825	9.633013	9.63519
37	15 617526	619773	622010	624238	626455	628663	630862	633050	63522
38	30 617563	619810	622047	624275	626492	628700	630898	633086	63526
39	45 617601	619848	622085	624312	626529	628736	630934	633122	63530
40	0 9.617638	9.619885	9.622122	9.624349	9.626566	9.628773	9.630971	9.633159	9.63533
41	15 617676	619922	622159	624386	626603	628810	631007	633195	63537
42	30 617713	619960	622196	624423	626640	628847	631044	633231	63540
43	45 617751	619997	622233	624460	626676	628883	631080	633268	63544
44	0 9.617788	9.620034	9.622271	9.624497	9.626713	9.628920	9.631117	9.633304	9.63548
45	15 617826	620072	622308	624534	626750	628957	631153	633341	63551
46	30 617863	620109	622345	624571	626787	628993	631190	633377	63555
47	45 617901	620146	622382	624608	626824	629030	631226	633413	63559
48	0 9.617938	9.620184	9.622419	9.624645	9.626861	9.629067	9.631263	9.633450	9.63562
49	15 617976	620221	622456	624682	626897	629103	631299	633486	63566
50	30 618013	620259	622494	624719	626934	629140	631336	633522	63569
51	45 618051	620296	622531	624756	626971	629177	631373	633559	63573
52	0 9.618088	9.620331	9.622568	9.624793	9.627008	9.629213	9.631409	9.633595	9.63577
53	15 618126	620370	622605	624830	627045	629250	631446	633631	63580
54	30 618163	620408	622642	624867	627082	629287	631482	633668	63584
55	45 618201	620445	622679	624904	627118	629323	631519	633704	63588
56	0 9.618238	9.620482	9.622717	9.624941	9.627155	9.629360	9.631555	9.633740	9.63591
57	15 618276	620520	622754	624978	627192	629397	631592	633777	63595
58	30 618313	620557	622791	625015	627229	629433	631628	633813	63598
59	45 618351	620594	622828	625052	627266	629471	631665	633849	63602
60	0 9.618388	9.620632	9.622865	9.625089	9.627303	9.629507	9.631701	9.633888	9.63606
	39"	38"	37"	36"	35"	34"	33"	32"	31"

5 Hours.

Log. Haverline. (c)

5 Hours.

	30"	31"	32"	33"	34"	35"	36"	37"	38"	39"	
	82 deg.			83 deg.			84 deg.				
0	638327	640383	642529	644666	646794	648913	651022	653122	655213	657294	60
1	638343	640418	642565	644702	646829	648948	651057	653157	655247	657329	59
2	638359	640454	642601	644737	646865	648983	651092	653192	655282	657365	58
3	638375	640490	642636	644773	646900	649018	651127	653227	655317	657398	57
4	638391	640526	642672	644808	646936	649053	651162	653261	655352	657432	56
5	638407	640562	642708	644844	646971	649088	651197	653296	655387	657467	55
6	638423	640598	642743	644880	647006	649124	651232	653331	655421	657502	54
7	638439	640633	642779	644915	647042	649159	651267	653366	655456	657536	53
8	638455	640669	642815	644951	647077	649194	651302	653401	655491	657571	52
9	638471	640705	642850	644986	647112	649230	651337	653436	655525	657606	51
10	638487	640741	642886	645022	647148	649265	651372	653471	655560	657640	50
11	638503	640777	642922	645057	647183	649300	651407	653506	655595	657675	49
12	638519	640813	642957	645093	647219	649335	651443	653541	655630	657709	48
13	638535	640848	642993	645128	647254	649370	651478	653575	655664	657744	47
14	638551	640884	643029	645164	647289	649406	651513	653610	655699	657779	46
15	638567	640920	643064	645199	647325	649441	651548	653645	655734	657813	45
16	638583	640956	643100	645235	647360	649476	651583	653680	655769	657848	44
17	638599	640992	643136	645270	647395	649511	651618	653715	655803	657883	43
18	638615	641028	643171	645306	647431	649546	651653	653750	655838	657917	42
19	638631	641063	643207	645341	647466	649581	651688	653785	655873	657951	41
20	638647	641099	643243	645377	647501	649617	651723	653820	655907	657986	40
21	638663	641135	643278	645412	647537	649652	651758	653854	655942	658020	39
22	638679	641171	643314	645448	647572	649687	651793	653889	655977	658055	38
23	638695	641207	643349	645483	647607	649722	651828	653924	656011	658090	37
24	638711	641242	643385	645519	647643	649757	651863	653959	656046	658124	36
25	638727	641278	643421	645554	647678	649792	651898	653994	656081	658159	35
26	638743	641314	643456	645590	647713	649828	651933	654029	656116	658193	34
27	638759	641350	643492	645625	647749	649863	651968	654064	656150	658228	33
28	638775	641385	643528	645660	647784	649898	652003	654099	656185	658262	32
29	638791	641421	643563	645696	647819	649933	652038	654133	656220	658297	31
30	638807	641457	643599	645731	647855	649968	652073	654168	656254	658332	30
31	638823	641493	643635	645766	647890	650003	652108	654203	656288	658366	29
32	638839	641529	643670	645802	647925	650039	652143	654238	656324	658401	28
33	638855	641564	643706	645838	647960	650074	652178	654273	656358	658435	27
34	638871	641600	643741	645873	647996	650109	652213	654308	656393	658470	26
35	638887	641636	643777	645909	648031	650144	652248	654342	656428	658504	25
36	638903	641672	643813	645944	648066	650179	652283	654377	656463	658539	24
37	638919	641707	643848	645980	648101	650214	652318	654412	656497	658573	23
38	638935	641743	643884	646015	648137	650249	652353	654447	656532	658608	22
39	638951	641779	643919	646050	648172	650285	652388	654482	656567	658642	21
40	638967	641815	643955	646086	648207	650320	652423	654517	656601	658677	20
41	638983	641851	643991	646121	648243	650355	652458	654551	656636	658711	19
42	638999	641886	644026	646157	648278	650390	652493	654586	656671	658746	18
43	639015	641922	644062	646192	648313	650425	652528	654621	656705	658780	17
44	639031	641958	644097	646228	648349	650460	652563	654656	656740	658815	16
45	639047	641993	644133	646263	648384	650495	652598	654691	656775	658849	15
46	639063	642029	644168	646298	648419	650530	652633	654726	656809	658884	14
47	639079	642065	644204	646334	648454	650565	652667	654760	656844	658918	13
48	639095	642101	644240	646369	648490	650601	652702	654795	656879	658953	12
49	639111	642136	644275	646405	648525	650636	652737	654830	656913	658987	11
50	639127	642172	644311	646440	648560	650671	652772	654865	656948	659022	10
51	639143	642208	644346	646476	648595	650706	652807	654899	656982	659056	9
52	639159	642243	644382	646511	648631	650741	652842	654934	657017	659091	8
53	639175	642279	644417	646546	648666	650776	652877	654969	657052	659125	7
54	639191	642315	644453	646582	648701	650811	652912	655004	657086	659160	6
55	639207	642351	644489	646617	648736	650846	652947	655039	657121	659194	5
56	639223	642386	644524	646653	648772	650881	652982	655073	657156	659229	4
57	639239	642422	644560	646688	648807	650916	653017	655108	657190	659263	3
58	639255	642458	644595	646723	648841	650952	653052	655143	657225	659298	2
59	639271	642493	644631	646759	648877	650987	653087	655178	657259	659332	1
60	639287	642529	644666	646794	648913	651022	653122	655213	657294	659367	0
	29"	28"	27"	26"	25"	24"	23"	22"	21"	20"	

18 Hours.

24

18 Hours.

	40"	41"	42"	43"	44"	45"	46"	47"	48"
	85 deg.				86 deg.				87 deg.
0	659267	661430	663485	665530	667567	669594	671613	673623	675624
1	659401	661464	663519	665564	667601	669628	671647	673657	675658
2	659436	661499	663553	665598	667634	669662	671680	673690	675691
3	659470	661533	663587	665632	667668	669695	671714	673723	675724
4	659505	661567	663621	665666	667702	669729	671747	673757	675758
5	659539	661602	663655	665700	667736	669763	671781	673790	675792
6	659573	661636	663689	665734	667770	669797	671815	673824	675824
7	659608	661670	663724	665768	667804	669831	671848	673857	675857
8	659642	661705	663758	665802	667838	669864	671882	673890	675891
9	659677	661739	663792	665836	667871	669898	671915	673924	675924
10	659711	661773	663826	665870	667905	669931	671949	673957	675957
11	659746	661807	663860	665904	667939	669965	671982	673991	675990
12	659780	661842	663894	665938	667973	669999	672016	674024	676024
13	659814	661876	663928	665972	668007	670033	672049	674057	676057
14	659848	661910	663963	666006	668041	670066	672083	674091	676090
15	659883	661944	663997	666040	668075	670100	672116	674124	676123
16	659918	661979	664031	666074	668108	670134	672150	674158	676157
17	659952	662013	664065	666108	668142	670167	672182	674191	676190
18	659987	662047	664099	666142	668176	670201	672217	674224	676223
19	660021	662082	664133	666176	668210	670235	672251	674258	676256
20	660056	662116	664167	666210	668244	670268	672284	674291	676290
21	660090	662150	664201	666244	668277	670302	672318	674325	676323
22	660124	662185	664236	666278	668311	670336	672351	674358	676356
23	660159	662219	664270	666312	668345	670369	672385	674391	676389
24	660193	662253	664304	666346	668379	670403	672418	674425	676422
25	660227	662287	664338	666380	668413	670437	672452	674458	676456
26	660262	662322	664372	666414	668446	670470	672485	674491	676489
27	660296	662356	664406	666448	668480	670504	672519	674525	676522
28	660331	662390	664440	666482	668514	670538	672552	674558	676555
29	660365	662424	664474	666515	668548	670571	672586	674591	676589
30	660400	662459	664508	666549	668582	670605	672619	674625	676621
31	660434	662493	664542	666583	668615	670638	672653	674658	676653
32	660468	662527	664577	666617	668649	670672	672686	674692	676686
33	660503	662561	664611	666651	668683	670706	672720	674725	676721
34	660537	662595	664645	666685	668717	670739	672753	674758	676755
35	660571	662630	664679	666719	668751	670773	672787	674792	676788
36	660606	662664	664713	666753	668784	670807	672820	674825	676821
37	660640	662698	664747	666787	668818	670840	672854	674858	676854
38	660675	662732	664781	666821	668852	670874	672887	674892	676887
39	660709	662767	664815	666855	668886	670908	672921	674925	676921
40	660743	662801	664849	666889	668919	670941	672954	674958	676954
41	660778	662835	664883	666923	668953	670975	672988	674992	676987
42	660812	662869	664917	666957	668987	671008	673021	675025	677020
43	660846	662903	664951	666991	669021	671042	673055	675058	677053
44	660881	662938	664986	667024	669054	671076	673088	675092	677086
45	660915	662972	665020	667058	669088	671109	673121	675125	677120
46	660949	663006	665054	667092	669122	671143	673155	675158	677153
47	660984	663040	665088	667126	669156	671176	673188	675192	677186
48	661018	663074	665122	667160	669190	671210	673222	675225	677219
49	661052	663109	665156	667194	669223	671244	673255	675258	677252
50	661087	663143	665190	667228	669257	671277	673289	675291	677285
51	661121	663177	665224	667262	669291	671311	673322	675325	677319
52	661156	663211	665258	667296	669324	671344	673356	675358	677352
53	661190	663245	665292	667329	669358	671378	673389	675391	677385
54	661224	663280	665326	667363	669392	671411	673423	675425	677418
55	661258	663314	665360	667397	669426	671445	673456	675458	677451
56	661293	663348	665394	667431	669459	671479	673489	675491	677484
57	661327	663382	665428	667465	669493	671513	673523	675525	677518
58	661362	663416	665462	667499	669527	671546	673556	675558	677551
59	661396	663450	665496	667533	669561	671580	673590	675591	677584
60	661430	663485	665530	667567	669594	671613	673623	675624	677617
19"	18"	17"	16"	15"	14"	13"	12"	11"	

	50"	51"	52"	53"	54"	55"	56"	57"	58"	59"
87 deg.	88 deg.						89 deg.			
05.679001	9.681576	9.683543	9.685501	9.687450	9.689391	9.691324	9.693249	9.695163	9.69707	
115 679034	681609	683575	685533	687482	689423	691356	693280	695195	697100	
230 679067	681642	683608	685566	687515	689456	691388	693312	695227	697134	
345 679100	681674	683641	685598	687547	689488	691420	693344	695259	697164	
460 679133	681707	683673	685631	687580	689520	691452	693376	695291	697191	
575 679166	681740	683706	685663	687612	689552	691484	693408	695323	697222	
690 679199	681773	683739	685696	687645	689585	691516	693440	695355	697251	
805 679232	681806	683771	685728	687677	689617	691548	693472	695387	697284	
920 679265	681839	683804	685761	687709	689649	691581	693504	695418	697321	
1035 679298	681871	683837	685794	687742	689681	691613	693536	695450	697354	
1150 679331	681904	683869	685826	687774	689714	691645	693568	695482	697386	
1265 679364	681937	683902	685859	687806	689746	691677	693600	695514	697418	
1380 679397	681970	683935	685891	687839	689778	691709	693632	695546	697451	
1495 679430	682003	683967	685923	687871	689810	691741	693663	695577	697483	
1610 679463	682036	684000	685956	687904	689843	691773	693695	695609	697516	
1725 679496	682068	684033	685989	687936	689875	691805	693727	695641	697548	
1840 679529	682101	684066	686021	687968	689907	691838	693759	695673	697581	
1955 679562	682134	684098	686054	688001	689939	691870	693791	695705	697611	
2070 679595	682167	684131	686086	688033	689972	691902	693823	695737	697644	
2185 679628	682200	684163	686119	688066	690004	691934	693855	695769	697677	
2300 679661	682232	684196	686151	688098	690036	691966	693887	695800	697710	
2415 679694	682265	684229	686184	688130	690068	691998	693919	695832	697743	
2530 679727	682298	684261	686216	688163	690101	692030	693951	695864	697776	
2645 679760	682331	684294	686249	688195	690133	692062	693983	695896	697809	
2760 679793	682364	684327	686281	688227	690165	692094	694015	695927	697842	
2875 679826	682396	684359	686314	688260	690197	692126	694047	695959	697875	
2990 679859	682429	684392	686346	688292	690230	692158	694079	695991	697908	
3105 679892	682462	684425	686379	688325	690262	692190	694111	696023	697941	
3220 679925	682495	684457	686411	688357	690294	692223	694143	696055	697974	
3335 679958	682528	684490	686444	688389	690326	692255	694175	696087	697998	
3450 679991	682560	684523	686476	688422	690358	692287	694207	696118	698021	
3565 680024	682593	684555	686509	688454	690391	692319	694239	696150	698054	
3680 680057	682626	684588	686541	688486	690423	692351	694271	696182	698086	
3795 680090	682659	684620	686574	688519	690455	692383	694302	696214	698119	
3910 680123	682691	684653	686606	688551	690487	692415	694334	696246	698151	
4025 680156	682724	684686	686639	688583	690519	692447	694366	696277	698184	
4140 680189	682757	684718	686671	688616	690552	692479	694398	696309	698217	
4255 680222	682790	684751	686704	688648	690584	692511	694430	696341	698249	
4370 680255	682822	684784	686736	688680	690616	692543	694462	696372	698282	
4485 680288	682855	684816	686769	688713	690648	692575	694494	696404	698314	
4600 680321	682888	684849	686801	688745	690680	692607	694526	696436	698346	
4715 680354	682921	684882	686834	688777	690712	692639	694558	696468	698378	
4830 680387	682953	684914	686866	688810	690745	692671	694590	696500	698410	
4945 680420	682986	684947	686899	688843	690777	692703	694622	696531	698443	
5060 680453	683019	684979	686931	688874	690809	692735	694653	696563	698475	
5175 680486	683052	685012	686963	688907	690841	692767	694685	696595	698508	
5290 680519	683084	685044	686996	688939	690873	692800	694717	696627	698540	
5405 680552	683117	685077	687028	688971	690906	692831	694749	696658	698573	
5520 680585	683150	685110	687061	689004	690938	692864	694781	696690	698605	
5635 680618	683183	685142	687093	689036	690970	692896	694813	696722	698638	
5750 680651	683215	685175	687126	689068	691002	692928	694845	696754	698670	
5865 680684	683248	685207	687158	689100	691034	692960	694877	696785	698703	
5980 680717	683281	685240	687191	689133	691066	692992	694909	696817	698735	
6095 680750	683314	685273	687223	689165	691099	693024	694940	696849	698768	
6210 680783	683346	685305	687255	689197	691131	693056	694972	696881	698800	
6325 680816	683379	685338	687289	689230	691163	693088	695004	696912	698833	
6440 680849	683412	685370	687320	689262	691195	693120	695036	696944	698865	
6555 680882	683444	685403	687353	689294	691227	693152	695068	696976	698898	
6670 680915	683477	685435	687385	689326	691259	693184	695100	697007	698930	
6785 680948	683510	685468	687418	689359	691291	693216	695132	697039	698963	
6900 680981	683543	685501	687450	689391	691324	693248	695163	697071	698995	

6 Нормы.

17 B...

	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	
	92 deg.			93 deg.			94 deg.				
0	9.717512	9.719322	9.721124	9.722919	9.724705	9.726484	9.728255	9.730018	9.731773	9.733520	60
1	9.717540	9.719340	9.721144	9.722949	9.724735	9.726513	9.728284	9.730047	9.731803	9.733551	59
2	9.717573	9.719388	9.721184	9.722978	9.724765	9.726543	9.728314	9.730077	9.731832	9.733580	58
3	9.717603	9.719413	9.721214	9.723008	9.724794	9.726573	9.728343	9.730106	9.731861	9.733609	57
4	9.717632	9.719443	9.721244	9.723038	9.724824	9.726602	9.728373	9.730135	9.731890	9.733638	56
5	9.717663	9.719473	9.721274	9.723068	9.724854	9.726632	9.728402	9.730165	9.731920	9.733667	55
6	9.717694	9.719503	9.721304	9.723098	9.724883	9.726661	9.728432	9.730194	9.731949	9.733696	54
7	9.717724	9.719533	9.721334	9.723128	9.724913	9.726691	9.728461	9.730223	9.731978	9.733725	53
8	9.717754	9.719563	9.721364	9.723157	9.724943	9.726721	9.728490	9.730253	9.732007	9.733754	52
9	9.717784	9.719593	9.721394	9.723187	9.724973	9.726750	9.728520	9.730282	9.732036	9.733783	51
10	9.717814	9.719623	9.721424	9.723217	9.725002	9.726780	9.728549	9.730311	9.732066	9.733812	50
11	9.717845	9.719653	9.721454	9.723247	9.725032	9.726809	9.728579	9.730341	9.732095	9.733841	49
12	9.717875	9.719683	9.721484	9.723277	9.725062	9.726839	9.728608	9.730370	9.732124	9.733870	48
13	9.717905	9.719713	9.721514	9.723307	9.725091	9.726868	9.728638	9.730399	9.732153	9.733899	47
14	9.717935	9.719743	9.721544	9.723336	9.725121	9.726898	9.728667	9.730428	9.732182	9.733928	46
15	9.717965	9.719773	9.721574	9.723366	9.725151	9.726927	9.728696	9.730458	9.732211	9.733957	45
16	9.717995	9.719803	9.721604	9.723396	9.725180	9.726957	9.728726	9.730487	9.732241	9.733986	44
17	9.718025	9.719833	9.721634	9.723426	9.725210	9.726986	9.728755	9.730516	9.732270	9.734015	43
18	9.718055	9.719864	9.721664	9.723456	9.725240	9.727016	9.728785	9.730546	9.732299	9.734044	42
19	9.718085	9.719894	9.721693	9.723485	9.725269	9.727046	9.728814	9.730575	9.732328	9.734073	41
20	9.718115	9.719924	9.721723	9.723515	9.725299	9.727075	9.728844	9.730604	9.732357	9.734102	40
21	9.718145	9.719954	9.721753	9.723545	9.725329	9.727105	9.728873	9.730633	9.732386	9.734131	39
22	9.718177	9.719984	9.721783	9.723575	9.725358	9.727134	9.728902	9.730663	9.732415	9.734161	38
23	9.718207	9.720014	9.721813	9.723604	9.725388	9.727164	9.728932	9.730692	9.732445	9.734190	37
24	9.718237	9.720044	9.721843	9.723634	9.725418	9.727193	9.728961	9.730721	9.732474	9.734219	36
25	9.718267	9.720074	9.721873	9.723664	9.725447	9.727223	9.728991	9.730751	9.732503	9.734247	35
26	9.718297	9.720104	9.721903	9.723694	9.725477	9.727252	9.729020	9.730780	9.732532	9.734277	34
27	9.718328	9.720134	9.721933	9.723724	9.725507	9.727282	9.729049	9.730809	9.732561	9.734306	33
28	9.718358	9.720164	9.721963	9.723753	9.725536	9.727311	9.729079	9.730838	9.732590	9.734335	32
29	9.718388	9.720194	9.721993	9.723783	9.725566	9.727341	9.729108	9.730868	9.732619	9.734364	31
30	9.718418	9.720224	9.722023	9.723813	9.725596	9.727370	9.729138	9.730897	9.732649	9.734393	30
31	9.718448	9.720254	9.722053	9.723843	9.725625	9.727400	9.729167	9.730926	9.732678	9.734422	29
32	9.718478	9.720284	9.722082	9.723873	9.725655	9.727429	9.729196	9.730955	9.732707	9.734451	28
33	9.718509	9.720314	9.722112	9.723902	9.725684	9.727459	9.729226	9.730985	9.732736	9.734480	27
34	9.718539	9.720344	9.722142	9.723932	9.725714	9.727488	9.729255	9.731014	9.732765	9.734509	26
35	9.718569	9.720374	9.722172	9.723962	9.725744	9.727518	9.729284	9.731043	9.732794	9.734538	25
36	9.718599	9.720404	9.722202	9.723992	9.725773	9.727547	9.729314	9.731072	9.732823	9.734567	24
37	9.718629	9.720435	9.722232	9.724021	9.725803	9.727577	9.729343	9.731102	9.732852	9.734596	23
38	9.718659	9.720465	9.722262	9.724051	9.725833	9.727606	9.729373	9.731131	9.732882	9.734625	22
39	9.718689	9.720495	9.722292	9.724081	9.725862	9.727636	9.729402	9.731160	9.732911	9.734654	21
40	9.718720	9.720525	9.722322	9.724111	9.725892	9.727665	9.729431	9.731189	9.732940	9.734683	20
41	9.718750	9.720555	9.722351	9.724140	9.725922	9.727695	9.729461	9.731219	9.732969	9.734711	19
42	9.718780	9.720585	9.722381	9.724170	9.725951	9.727724	9.729490	9.731248	9.732998	9.734741	18
43	9.718810	9.720615	9.722411	9.724200	9.725981	9.727754	9.729519	9.731277	9.733027	9.734769	17
44	9.718840	9.720645	9.722441	9.724230	9.726010	9.727783	9.729549	9.731306	9.733056	9.734798	16
45	9.718870	9.720675	9.722471	9.724259	9.726040	9.727813	9.729578	9.731335	9.733085	9.734827	15
46	9.718901	9.720705	9.722501	9.724289	9.726070	9.727842	9.729607	9.731365	9.733114	9.734856	14
47	9.718931	9.720735	9.722531	9.724319	9.726099	9.727872	9.729637	9.731394	9.733143	9.734885	13
48	9.718961	9.720765	9.722561	9.724349	9.726129	9.727901	9.729666	9.731423	9.733173	9.734914	12
49	9.718991	9.720795	9.722590	9.724378	9.726158	9.727931	9.729695	9.731452	9.733202	9.734943	11
50	9.719021	9.720825	9.722620	9.724408	9.726188	9.727960	9.729725	9.731482	9.733231	9.734972	10
51	9.719051	9.720855	9.722650	9.724438	9.726218	9.727990	9.729754	9.731511	9.733260	9.735001	9
52	9.719081	9.720885	9.722680	9.724468	9.726247	9.728019	9.729784	9.731540	9.733289	9.735030	8
53	9.719111	9.720915	9.722710	9.724497	9.726276	9.728049	9.729813	9.731569	9.733318	9.735059	7
54	9.719142	9.720945	9.722740	9.724527	9.726306	9.728078	9.729842	9.731598	9.733347	9.735088	6
55	9.719172	9.720975	9.722770	9.724557	9.726336	9.728108	9.729871	9.731628	9.733376	9.735117	5
56	9.719202	9.721005	9.722800	9.724586	9.726366	9.728137	9.729901	9.731657	9.733405	9.735146	4
57	9.719232	9.721035	9.722829	9.724616	9.726395	9.728167	9.729930	9.731687	9.733434	9.735175	3
58	9.719262	9.721064	9.722859	9.724646	9.726425	9.728196	9.729960	9.731715	9.733463	9.735204	2
59	9.719292	9.721094	9.722889	9.724676	9.726454	9.728225	9.729989	9.731744	9.733492	9.735233	1
60	9.719322	9.721124	9.722919	9.724705	9.726484	9.728255	9.730018	9.731773	9.733520	9.735262	0

	20 ^m	21 ^m	22 ^m	23 ^m	24 ^m	25 ^m	26 ^m	27 ^m	28 ^m	29 ^m
	95 deg.				96 deg.				97 deg.	
0	9.735262	9.736994	9.738719	9.740437	9.742147	9.743849	9.745544	9.747232	9.748912	9.75058
15	735291	737023	738748	740465	742175	743878	745573	747260	748940	75061
30	735320	737052	738777	740494	742204	743906	745601	747288	748968	7506
45	735349	737081	738805	740523	742232	743934	745629	747316	748995	75066
1	9.735378	9.737110	9.738834	9.740551	9.742261	9.743963	9.745657	9.747344	9.749024	9.75069
15	735407	737139	738863	740580	742289	743991	745685	747372	749052	7507
30	735435	737167	738892	740608	742318	744019	745714	747400	749080	7507
45	735464	737196	738920	740637	742346	744047	745742	747428	749108	75078
2	9.735493	9.737225	9.738949	9.740665	9.742374	9.744076	9.745770	9.747457	9.749136	9.7508
15	735522	737254	738977	740694	742403	744104	745798	747485	749164	7508
30	735551	737282	739006	740722	742431	744132	745826	747513	749192	7508
45	735580	737311	739035	740751	742459	744161	745854	747541	749219	7508
3	9.735609	9.737340	9.739064	9.740780	9.742488	9.744189	9.745893	9.747569	9.749247	9.7509
15	735638	737379	739092	740808	742516	744217	745911	747597	749275	7509
30	735667	737398	739121	740837	742545	744246	745939	747625	749303	7509
45	735696	737426	739149	740865	742573	744274	745967	747653	749331	7510
4	9.735725	9.737455	9.739178	9.740894	9.742602	9.744302	9.745995	9.747681	9.749359	9.7510
15	735753	737484	739207	740922	742630	744330	746023	747709	749387	7510
30	735782	737513	739235	740951	742658	744359	746052	747737	749415	7510
45	735811	737541	739264	740979	742687	744387	746080	747765	749443	751
5	9.735840	9.737570	9.739293	9.741008	9.742715	9.744415	9.746108	9.747793	9.749471	9.751
15	735869	737599	739321	741036	742744	744443	746136	747821	749499	751
30	735898	737628	739350	741065	742772	744472	746164	747849	749527	751
45	735927	737656	739379	741093	742800	744500	746192	747877	749554	751
6	9.735956	9.737685	9.739407	9.741122	9.742829	9.744528	9.746220	9.747905	9.749582	9.751
15	735985	737714	739436	741150	742857	744557	746248	747933	749610	751
30	736014	737743	739465	741179	742886	744585	746277	747961	749638	751
45	736042	737772	739493	741207	742914	744613	746305	747989	749666	751
7	9.736071	9.737800	9.739522	9.741236	9.742942	9.744641	9.746333	9.748017	9.749694	9.751
15	736100	737829	739551	741264	742971	744669	746361	748045	749722	751
30	736129	737858	739579	741293	742999	744698	746389	748073	749750	751
45	736158	737887	739608	741321	743027	744726	746417	748101	749777	751
8	9.736187	9.737915	9.739636	9.741350	9.743056	9.744754	9.746445	9.748129	9.749805	9.751
15	736216	737944	739665	741378	743084	744783	746473	748157	749833	751
30	736245	737973	739694	741407	743113	744811	746502	748185	749861	751
45	736273	738001	739722	741435	743141	744839	746530	748213	749889	7515
9	9.736302	9.738030	9.739751	9.741464	9.743169	9.744867	9.746558	9.748241	9.749917	9.7515
15	736331	738059	739779	741492	743198	744895	746586	748269	749945	7516
30	736360	738088	739808	741521	743226	744924	746614	748297	749973	75164
45	736389	738116	739837	741549	743254	744952	746642	748325	750000	751668
10	9.736418	9.738145	9.739865	9.741578	9.743283	9.744980	9.746670	9.748353	9.750028	9.751696
15	736446	738174	739894	741606	743311	745008	746698	748381	750056	751724
30	736475	738203	739922	741635	743339	745037	746727	748409	750084	751752
45	736504	738231	739951	741663	743368	745065	746755	748437	750112	751779
11	9.736533	9.738260	9.739980	9.741692	9.743396	9.745093	9.746783	9.748465	9.750140	9.751807
15	736562	738289	740008	741720	743424	745121	746811	748493	750168	751835
30	736591	738318	740037	741749	743453	745150	746839	748521	750195	751863
45	736620	738346	740065	741777	743481	745178	746867	748549	750223	751890
12	9.736648	9.738375	9.740094	9.741806	9.743510	9.745206	9.746895	9.748577	9.750251	9.751918
15	736677	738404	740123	741834	743538	745234	746923	748605	750279	751946
30	736706	738432	740151	741862	743566	745262	746951	748633	750307	751974
45	736735	738461	740180	741891	743595	745291	746979	748661	750335	752001
13	9.736764	9.738490	9.740208	9.741919	9.743623	9.745319	9.747007	9.748689	9.750363	9.752029
15	736793	738518	740237	741948	743651	745347	747035	748717	750390	752057
30	736821	738547	740266	741976	743680	745375	747064	748745	750418	752084
45	736850	738576	740294	742005	743708	745403	747092	748773	750446	752112
14	9.736879	9.738605	9.740323	9.742033	9.743736	9.745432	9.747120	9.748801	9.750474	9.752140
15	736908	738633	740351	742061	743764	745460	747148	748828	750502	752167
30	736937	738662	740380	742090	743793	745488	747176	748856	750529	752195
45	736965	738691	740408	742118	743821	745516	747204	748884	750557	752223
60	9.736994	9.738719	9.740437	9.742147	9.743849	9.745544	9.747232	9.748912	9.750585	9.752251
	39 ^m	38 ^m	37 ^m	36 ^m	35 ^m	34 ^m	33 ^m	32 ^m	31 ^m	30 ^m

80°	81°	82°	83°	84°	85°	86°	87°	88°	89°
97 deg.	98 deg.					99 deg.			
52261	52276	52291	52306	52321	52336	52351	52366	52381	52396
52411	52426	52441	52456	52471	52486	52501	52516	52531	52546
52596	52611	52626	52641	52656	52671	52686	52701	52716	52731
52786	52801	52816	52831	52846	52861	52876	52891	52906	52921
52976	52991	53006	53021	53036	53051	53066	53081	53096	53111
53166	53181	53196	53211	53226	53241	53256	53271	53286	53301
53356	53371	53386	53401	53416	53431	53446	53461	53476	53491
53546	53561	53576	53591	53606	53621	53636	53651	53666	53681
53736	53751	53766	53781	53796	53811	53826	53841	53856	53871
53926	53941	53956	53971	53986	54001	54016	54031	54046	54061
54116	54131	54146	54161	54176	54191	54206	54221	54236	54251
54306	54321	54336	54351	54366	54381	54396	54411	54426	54441
54496	54511	54526	54541	54556	54571	54586	54601	54616	54631
54686	54701	54716	54731	54746	54761	54776	54791	54806	54821
54876	54891	54906	54921	54936	54951	54966	54981	54996	55011
55066	55081	55096	55111	55126	55141	55156	55171	55186	55201
55256	55271	55286	55301	55316	55331	55346	55361	55376	55391
55446	55461	55476	55491	55506	55521	55536	55551	55566	55581
55636	55651	55666	55681	55696	55711	55726	55741	55756	55771
55826	55841	55856	55871	55886	55901	55916	55931	55946	55961
56016	56031	56046	56061	56076	56091	56106	56121	56136	56151
56206	56221	56236	56251	56266	56281	56296	56311	56326	56341
56396	56411	56426	56441	56456	56471	56486	56501	56516	56531
56586	56601	56616	56631	56646	56661	56676	56691	56706	56721
56776	56791	56806	56821	56836	56851	56866	56881	56896	56911
56966	56981	56996	57011	57026	57041	57056	57071	57086	57101
57156	57171	57186	57201	57216	57231	57246	57261	57276	57291
57346	57361	57376	57391	57406	57421	57436	57451	57466	57481
57536	57551	57566	57581	57596	57611	57626	57641	57656	57671
57726	57741	57756	57771	57786	57801	57816	57831	57846	57861
57916	57931	57946	57961	57976	57991	58006	58021	58036	58051
58106	58121	58136	58151	58166	58181	58196	58211	58226	58241
58296	58311	58326	58341	58356	58371	58386	58401	58416	58431
58486	58501	58516	58531	58546	58561	58576	58591	58606	58621
58676	58691	58706	58721	58736	58751	58766	58781	58796	58811
58866	58881	58896	58911	58926	58941	58956	58971	58986	59001
59056	59071	59086	59101	59116	59131	59146	59161	59176	59191
59246	59261	59276	59291	59306	59321	59336	59351	59366	59381
59436	59451	59466	59481	59496	59511	59526	59541	59556	59571
59626	59641	59656	59671	59686	59701	59716	59731	59746	59761
59816	59831	59846	59861	59876	59891	59906	59921	59936	59951
59996	60011	60026	60041	60056	60071	60086	60101	60116	60131
60186	60201	60216	60231	60246	60261	60276	60291	60306	60321
60376	60391	60406	60421	60436	60451	60466	60481	60496	60511
60566	60581	60596	60611	60626	60641	60656	60671	60686	60701
60756	60771	60786	60801	60816	60831	60846	60861	60876	60891
60946	60961	60976	60991	61006	61021	61036	61051	61066	61081
61136	61151	61166	61181	61196	61211	61226	61241	61256	61271
61326	61341	61356	61371	61386	61401	61416	61431	61446	61461
61516	61531	61546	61561	61576	61591	61606	61621	61636	61651
61706	61721	61736	61751	61766	61781	61796	61811	61826	61841
61896	61911	61926	61941	61956	61971	61986	61996	62011	62026
62076	62091	62106	62121	62136	62151	62166	62181	62196	62211
62266	62281	62296	62311	62326	62341	62356	62371	62386	62401
62456	62471	62486	62501	62516	62531	62546	62561	62576	62591
62646	62661	62676	62691	62706	62721	62736	62751	62766	62781
62836	62851	62866	62881	62896	62911	62926	62941	62956	62971
63026	63041	63056	63071	63086	63101	63116	63131	63146	63161
63216	63231	63246	63261	63276	63291	63306	63321	63336	63351
63406	63421	63436	63451	63466	63481	63496	63511	63526	63541
63596	63611	63626	63641	63656	63671	63686	63701	63716	63731
63786	63801	63816	63831	63846	63861	63876	63891	63906	63921
63976	63991	64006	64021	64036	64051	64066	64081	64096	64111
64166	64181	64196	64211	64226	64241	64256	64271	64286	64301
64356	64371	64386	64401	64416	64431	64446	64461	64476	64491
64546	64561	64576	64591	64606	64621	64636	64651	64666	64681
64736	64751	64766	64781	64796	64811	64826	64841	64856	64871
64926	64941	64956	64971	64986	64996	65011	65026	65041	65056
65106	65121	65136	65151	65166	65181	65196	65211	65226	65241
65296	65311	65326	65341	65356	65371	65386	65401	65416	65431
65486	65501	65516	65531	65546	65561	65576	65591	65606	65621
65676	65691	65706	65721	65736	65751	65766	65781	65796	65811
65866	65881	65896	65911	65926	65941	65956	65971	65986	66001
66056	66071	66086	66101	66116	66131	66146	66161	66176	66191
66246	66261	66276	66291	66306	66321	66336	66351	66366	66381
66436	66451	66466	66481	66496	66511	66526	66541	66556	66571
66626	66641	66656	66671	66686	66701	66716	66731	66746	66761
66816	66831	66846	66861	66876	66891	66906	66921	66936	66951
66996	67011	67026	67041	67056	67071	67086	67101	67116	67131
67186	67201	67216	67231	67246	67261	67276	67291	67306	67321
67376	67391	67406	67421	67436	67451	67466	67481	67496	67511
67566	67581	67596	67611	67626	67641	67656	67671	67686	67701
67756	67771	67786	67801	67816	67831	67846	67861	67876	67891
67946	67961	67976	67991	68006	68021	68036	68051	68066	68081
68136	68151	68166	68181	68196	68211	68226	68241	68256	68271
68326	68341	68356	68371	68386	68401	68416	68431	68446	68461
68516	68531	68546	68561	68576	68591	68606	68621	68636	68651
68706	68721	68736	68751	68766	68781	68796	68811	68826	68841
68896	68911	68926	68941	68956	68971	68986	69001	69016	69031
69086	69101	69116	69131	69146	69161	69176	69191	69206	69221
69276	69291	69306	69321	69336	69351	69366	69381	69396	69411
69466	69481	69496	69511	69526	69541	69556	69571	69586	69601
69656	69671	69686	69701	69716	69731	69746	69761	69776	69791
69846	69861	69876	69891	69906	69921	69936	69951	69966	69981
70036	70051	70066	70081	70096	70111	70126	70141	70156	70171
70226	70241	70256	70271	70286	70301	70316	70331	70346	70361
70416	70431	70446	70461	70476	70491	70506	70521	70536	70551
70606	70621	70636	70651	70666	70681	70696	70711	70726	70741
70796	70811	70826	70841	70856	70871	70886	70901	70916	70931
70986	71001	71016	71031	71046	71061	71076	71091	71106	71121
71176	71191	71206	71221	71236	71251	71266	71281	71296	71311
71366	71381	71396	71411	71426	71441	71456	71471	71486	71501
71556	71571	71586	71601	71616	71631	71646	71661	71676	71691
71746	71761	71776	71791	71806	71821	71836	71851	71866	71881
71936	71951	71966	71981	71996	72011	72026	72041	72056	72071
72126	72141	72156	72171	72186	72201	72216	72231	72246	72261
72316	72331	72346	72361	72376	72391	72406	72421	72436	72451
72506	72521	72536	72551	72566	72581	72596	72611	72626	72641
72696	72711	72726	72741	72756	72771	72786	72801	72816	72831
72886	72901	72916	72931	72946	72961	72976	72991	73006	73021
73076	73091	73106	73121	73136	73151	73166	73181	73196	73211
73266	73281	73296	73311	73326	73341	73356	73371	73386	73401
73456	73471	73486	73501	73516	73531	73546	73561	73576	73591
73646	73661	73676	73691	73706	7				

	40°	41°	42°	43°	44°	45°	46°	47°	48°	
	100 deg.				101 deg.				102 deg.	
0	9.768508	9.770094	9.771674	9.773247	9.774812	9.776371	9.777923	9.779467	9.781005	9.7
1	15 768534	770121	771700	773273	774838	776397	777944	779493	781031	7
2	30 768561	770147	771727	773299	774864	776423	777974	779519	781056	7
3	45 768587	770174	771753	773325	774890	776448	778000	779544	781082	7
4	0 9.768614	9.770200	9.771779	9.773351	9.774916	9.776474	9.778028	9.779570	9.781107	9.7
5	15 768640	770226	771805	773377	774942	776500	778051	779596	781133	7
6	30 768667	770253	771832	773403	774968	776526	778077	779621	781159	7
7	45 768693	770279	771858	773429	774994	776552	778103	779647	781184	7
8	0 9.768720	9.770305	9.771884	9.773456	9.775020	9.776578	9.778129	9.779673	9.781210	9.7
9	15 768746	770332	771910	773482	775046	776604	778155	779698	781235	7
10	30 768773	770358	771937	773508	775072	776629	778180	779724	781261	7
11	45 768799	770385	771963	773534	775098	776655	778206	779750	781286	7
12	0 9.768826	9.770411	9.771989	9.773560	9.775124	9.776682	9.778232	9.779775	9.781312	9.7
13	15 768852	770437	772015	773586	775150	776707	778258	779801	781337	7
14	30 768879	770464	772042	773612	775176	776733	778284	779827	781362	7
15	45 768905	770490	772068	773639	775202	776759	778309	779852	781387	7
16	0 9.768932	9.770516	9.772094	9.773665	9.775228	9.776785	9.778335	9.779878	9.781412	9.7
17	15 768958	770543	772120	773691	775254	776811	778361	779904	781437	7
18	30 768985	770569	772147	773717	775280	776837	778387	779929	781462	7
19	45 769011	770595	772173	773743	775306	776863	778412	779955	781487	7
20	0 9.769038	9.770622	9.772199	9.773769	9.775332	9.776889	9.778438	9.779981	9.781512	9.7
21	15 769064	770648	772225	773795	775358	776915	778464	780006	781537	7
22	30 769090	770674	772251	773821	775384	776940	778490	780032	781562	7
23	45 769117	770701	772277	773847	775410	776966	778515	780057	781587	7
24	0 9.769143	9.770727	9.772304	9.773874	9.775436	9.776992	9.778541	9.780083	9.781612	9.7
25	15 769170	770753	772330	773900	775462	777018	778567	780109	781637	7
26	30 769196	770780	772356	773926	775488	777044	778593	780135	781662	7
27	45 769223	770806	772382	773952	775514	777070	778618	780160	781687	7
28	0 9.769249	9.770832	9.772409	9.773978	9.775540	9.777096	9.778644	9.780186	9.781712	9.7
29	15 769276	770858	772435	774004	775566	777122	778670	780211	781737	7
30	30 769302	770885	772461	774030	775592	777147	778696	780237	781762	7
31	45 769328	770911	772487	774056	775618	777173	778721	780263	781787	7
32	0 9.769355	9.770938	9.772514	9.774082	9.775644	9.777199	9.778747	9.780288	9.781812	9.7
33	15 769381	770964	772540	774108	775670	777225	778773	780314	781837	7
34	30 769408	770990	772566	774135	775696	777251	778799	780340	781862	7
35	45 769434	771017	772592	774161	775722	777277	778825	780365	781887	7
36	0 9.769461	9.771043	9.772618	9.774187	9.775748	9.777303	9.778850	9.780391	9.781912	9.7
37	15 769487	771069	772645	774213	775774	777328	778876	780416	781937	7
38	30 769514	771095	772671	774239	775800	777354	778902	780442	781962	7
39	45 769540	771122	772697	774265	775826	777380	778927	780468	781987	7
40	0 9.769566	9.771148	9.772723	9.774291	9.775852	9.777406	9.778953	9.780493	9.782037	9.7
41	15 769593	771174	772749	774317	775878	777432	778979	780519	782062	7
42	30 769619	771201	772776	774343	775904	777458	779005	780545	782087	7
43	45 769646	771227	772802	774369	775930	777483	779030	780570	782113	7
44	0 9.769672	9.771253	9.772828	9.774395	9.775956	9.777509	9.779056	9.780596	9.782129	9.7
45	15 769698	771280	772854	774421	775982	777535	779082	780621	782154	7
46	30 769725	771306	772880	774447	776008	777561	779107	780647	782180	7
47	45 769751	771332	772906	774473	776034	777587	779133	780672	782205	7
48	0 9.769778	9.771359	9.772933	9.774500	9.776060	9.777613	9.779159	9.780698	9.782231	9.7
49	15 769804	771385	772959	774526	776085	777638	779185	780724	782256	7
50	30 769831	771411	772985	774551	776111	777664	779210	780749	782282	7
51	45 769857	771437	773011	774577	776137	777690	779236	780775	782307	7
52	0 9.769883	9.771464	9.773037	9.774604	9.776163	9.777716	9.779262	9.780801	9.782333	9.7
53	15 769910	771490	773063	774630	776189	777742	779287	780826	782358	7
54	30 769936	771516	773089	774656	776215	777768	779313	780852	782383	7
55	45 769962	771543	773116	774682	776241	777793	779339	780877	782409	7
56	0 9.769989	9.771569	9.773142	9.774708	9.776267	9.777819	9.779364	9.780903	9.782434	9.7
57	15 770015	771595	773168	774734	776293	777845	779390	780929	782460	7
58	30 770042	771621	773194	774760	776319	777871	779416	780954	782485	7
59	45 770068	771648	773220	774786	776345	777897	779441	780980	782511	7
60	0 9.770094	9.771674	9.773247	9.774812	9.776371	9.777923	9.779467	9.781005	9.782536	9.7
	19°	18°	17°	16°	15°	14°	13°	12°	11°	

10°	51°	52°	53°	54°	55°	56°	57°	58°	59°
102 deg.	103 deg.					104 deg.			
784061	785578	787089	788593	790090	791580	793064	794541	796012	797476
784096	785603	787114	788618	790115	791601	793089	794566	796036	797500
784111	785629	787139	788643	790140	791630	793114	794591	796061	797525
784137	785654	787164	788668	790165	791655	793138	794615	796085	797549
784162	785679	787189	788693	790189	791680	793163	794640	796110	797573
784187	785704	787214	788718	790214	791704	793188	794664	796134	797598
784213	785729	787239	788743	790239	791729	793212	794689	796159	797622
784238	785753	787264	788768	790264	791754	793237	794713	796183	797646
784263	785778	787290	788793	790289	791779	793262	794738	796208	797671
784289	785805	787315	788818	790314	791803	793286	794762	796232	797695
784314	785830	787340	788843	790339	791828	793311	794787	796256	797719
784339	785855	787365	788868	790364	791853	793336	794812	796281	797744
784365	785881	787390	788893	790389	791878	793360	794836	796305	797768
784390	785906	787415	788918	790413	791902	793385	794861	796330	797792
784415	785931	787440	788943	790438	791927	793410	794885	796354	797817
784440	785956	787465	788968	790463	791952	793434	794910	796379	797841
784466	785982	787490	788993	790488	791977	793459	794934	796403	797865
784491	786007	787515	789018	790513	792001	793483	794959	796427	797890
784517	786032	787540	789043	790538	792026	793508	794983	796452	797914
784542	786057	787566	789067	790563	792051	793533	795008	796476	797938
784567	786082	787591	789093	790588	792076	793557	795032	796501	797962
784592	786107	787616	789117	790612	792100	793582	795057	796525	797987
784618	786133	787641	789142	790637	792125	793607	795081	796550	798011
784643	786158	787666	789167	790662	792150	793631	795106	796574	798035
784668	786183	787691	789192	790687	792175	793656	795130	796598	798060
784694	786208	787716	789217	790712	792199	793681	795155	796623	798084
784719	786233	787741	789242	790737	792224	793705	795180	796647	798108
784744	786259	787766	789267	790761	792249	793730	795204	796672	798133
784770	786284	787791	789292	790786	792274	793754	795229	796696	798157
784795	786309	787816	789317	790811	792298	793779	795253	796720	798181
784820	786334	787842	789342	790836	792323	793804	795278	796745	798205
784845	786359	787867	789367	790861	792348	793828	795302	796769	798230
784871	786385	787892	789392	790886	792373	793853	795327	796794	798254
784896	786410	787917	789417	790911	792397	793877	795351	796818	798278
784921	786435	787942	789442	790935	792422	793902	795376	796842	798303
784946	786460	787967	789467	790960	792447	793927	795400	796867	798327
784972	786485	787992	789492	790985	792472	793951	795425	796891	798351
784997	786510	788017	789517	791010	792496	793976	795449	796916	798375
785022	786536	788042	789542	791035	792521	794001	795474	796940	798400
785048	786561	788067	789567	791059	792546	794025	795498	796964	798424
785073	786586	788092	789592	791084	792570	794050	795523	796989	798448
785098	786611	788117	789617	791109	792595	794074	795547	797013	798473
785124	786636	788142	789641	791131	792620	794099	795572	797037	798497
785149	786661	788167	789666	791159	792644	794124	795596	797062	798521
785174	786687	788192	789691	791184	792669	794148	795621	797086	798545
785199	786712	788217	789716	791209	792694	794173	795645	797111	798570
785225	786737	788242	789741	791233	792719	794197	795669	797135	798594
785250	786762	788267	789766	791258	792743	794222	795694	797159	798618
785275	786787	788292	789791	791283	792768	794247	795718	797184	798642
785300	786812	788317	789816	791308	792793	794271	795743	797208	798667
785326	786837	788343	789841	791332	792817	794296	795767	797232	798691
785351	786862	788367	789866	791357	792842	794320	795792	797257	798715
785376	786888	788393	789891	791382	792867	794344	795816	797281	798739
785401	786913	788418	789916	791407	792891	794369	795841	797305	798764
785427	786938	788443	789941	791432	792916	794394	795865	797330	798788
785452	786963	788468	789965	791456	792941	794419	795890	797354	798812
785477	786988	788493	789990	791481	792966	794443	795914	797379	798836
785502	787013	788518	790015	791506	792990	794468	795939	797403	798861
785528	787038	788543	790040	791531	793015	794492	795963	797427	798885
785553	787064	788568	790065	791556	793040	794517	795988	797452	798909
785578	787089	788593	790090	791580	793064	794541	796012	797476	798933

	0 ^m	1 ^m	2 ^m	3 ^m	4 ^m	5 ^m	6 ^m	7 ^m	8 ^m	9 ^m
	105 deg.				106 deg.				107 deg.	
0	798933	800384	801828	803268	804697	806122	807540	808952	810357	811751
1	798938	800408	801852	803290	804721	806146	807564	808975	810381	811775
2	798942	800432	801876	803314	804745	806169	807587	808999	810404	811798
3	798946	800456	801900	803338	804769	806193	807611	809024	810428	811821
4	798950	800481	801924	803362	804792	806217	807635	809048	810451	811844
5	798954	800505	801948	803386	804816	806240	807658	809069	810474	811867
6	798958	800529	801972	803409	804840	806264	807682	809093	810498	811891
7	798962	800553	801996	803433	804864	806288	807705	809116	810521	811914
8	798966	800577	802020	803457	804888	806311	807729	809140	810544	811937
9	798970	800601	802044	803481	804911	806335	807752	809163	810568	811960
10	798974	800625	802068	803505	804935	806359	807776	809187	810591	811983
11	798978	800649	802092	803529	804959	806382	807800	809210	810614	812006
12	798982	800673	802116	803553	804983	806406	807823	809234	810638	812029
13	798986	800697	802140	803577	805006	806430	807847	809257	810661	812052
14	798990	800721	802164	803601	805030	806453	807870	809281	810684	812075
15	798994	800745	802188	803624	805054	806477	807894	809304	810708	812098
16	798998	800769	802212	803648	805078	806501	807917	809328	810731	812121
17	799002	800793	802236	803672	805102	806524	807941	809351	810754	812144
18	799006	800817	802260	803696	805125	806548	807964	809374	810778	812167
19	799010	800841	802284	803720	805149	806572	807988	809398	810801	812190
20	799014	800865	802308	803744	805173	806595	808012	809421	810824	812213
21	799018	800889	802332	803768	805197	806619	808035	809445	810848	812236
22	799022	800913	802356	803792	805220	806643	808059	809468	810871	812259
23	799026	800937	802380	803815	805244	806666	808082	809491	810895	812282
24	799030	800961	802404	803839	805268	806690	808106	809515	810918	812305
25	799034	800985	802428	803863	805292	806714	808129	809538	810942	812328
26	799038	801009	802452	803887	805315	806737	808153	809562	810965	812351
27	799042	801033	802476	803911	805339	806761	808176	809585	810989	812374
28	799046	801057	802500	803935	805363	806785	808200	809609	811011	812397
29	799050	801081	802524	803959	805387	806808	808223	809632	811034	812420
30	799054	801105	802548	803983	805410	806832	808247	809656	811058	812443
31	799058	801129	802572	804006	805434	806856	808270	809679	811081	812466
32	799062	801153	802596	804030	805458	806879	808294	809702	811104	812489
33	799066	801177	802620	804054	805482	806903	808317	809726	811128	812512
34	799070	801201	802644	804078	805505	806926	808341	809749	811151	812535
35	799074	801225	802668	804102	805529	806949	808365	809773	811174	812558
36	799078	801249	802692	804126	805553	806974	808388	809796	811198	812581
37	799082	801273	802716	804150	805577	806997	808412	809819	811221	812604
38	799086	801297	802740	804174	805600	807021	808435	809843	811244	812627
39	799090	801321	802764	804197	805624	807045	808459	809866	811267	812650
40	799094	801345	802788	804221	805648	807068	808482	809890	811291	812673
41	799098	801369	802812	804245	805672	807092	808506	809913	811314	812696
42	799102	801393	802836	804269	805695	807115	808529	809936	811337	812719
43	799106	801417	802860	804292	805719	807139	808553	809960	811361	812742
44	799110	801441	802884	804316	805743	807163	808576	809983	811384	812765
45	799114	801465	802908	804340	805766	807186	808600	810007	811407	812788
46	799118	801489	802932	804364	805790	807210	808623	810030	811431	812811
47	799122	801513	802956	804388	805814	807233	808647	810053	811454	812834
48	799126	801537	802980	804412	805838	807257	808670	810077	811477	812857
49	799130	801561	803004	804436	805861	807281	808694	810100	811500	812880
50	799134	801585	803028	804460	805885	807304	808717	810124	811524	812903
51	799138	801609	803052	804483	805909	807328	808741	810147	811547	812926
52	799142	801633	803076	804507	805932	807351	808764	810170	811570	812949
53	799146	801657	803100	804531	805956	807375	808788	810194	811594	812972
54	799150	801681	803124	804555	805980	807399	808811	810217	811617	813000
55	799154	801705	803148	804579	806003	807422	808835	810241	811640	813023
56	799158	801729	803172	804602	806027	807446	808858	810264	811663	813046
57	799162	801753	803196	804626	806051	807469	808882	810287	811687	813069
58	799166	801777	803220	804650	806075	807493	808905	810311	811710	813092
59	799170	801801	803244	804673	806098	807517	808929	810334	811733	813115
60	799174	801825	803268	804697	806122	807540	808952	810357	811756	813138
61	799178	801849	803292	804721	806146	807564	808975	810381	811779	813161
62	799182	801873	803316	804745	806169	807587	808999	810404	811802	813184
63	799186	801897	803340	804769	806193	807611	809024	810428	811825	813207
64	799190	801921	803364	804792	806217	807635	809048	810451	811848	813230
65	799194	801945	803388	804816	806240	807658	809069	810474	811871	813253
66	799198	801969	803412	804840	806264	807682	809093	810498	811894	813276
67	799202	801993	803436	804864	806288	807705	809116	810521	811917	813299
68	799206	802017	803460	804888	806311	807729	809140	810544	811940	813322
69	799210	802041	803484	804911	806335	807752	809163	810568	811963	813345
70	799214	802065	803508	804935	806359	807776	809187	810591	811986	813368
71	799218	802089	803532	804959	806382	807800	809210	810614	812009	813391
72	799222	802113	803556	804983	806406	807823	809234	810638	812032	813414
73	799226	802137	803580	805006	806430	807847	809257	810661	812055	813437
74	799230	802161	803604	805030	806453	807870	809281	810684	812078	813460
75	799234	802185	803628	805054	806477	807894	809304	810708	812101	813483
76	799238	802209	803652	805078	806501	807917	809328	810731	812124	813506
77	799242	802233	803676	805102	806524	807941	809351	810754	812147	813529
78	799246	802257	803700	805125	806548	807964	809374	810778	812170	813552
79	799250	802281	803724	805149	806572	807988	809398	810801	812193	813575
80	799254	802305	803748	805173	806595	808012	809421	810824	812216	813598
81	799258	802329	803772	805197	806619	808035	809445	810848	812239	813621
82	799262	802353	803796	805220	806643	808059	809468	810871	812262	813644
83	799266	802377	803820	805244	806666	808082	809491	810895	812285	813667
84	799270	802401	803844	805268	806690	808106	809515	810918	812308	813690
85	799274	802425	803868	805292	806714	808129	809538	810942	812331	813713
86	799278	802449	803892	805315	806737	808153	809562	810965	812354	813736
87	799282	802473	803916	805339	806761	808176	809585	810989	812377	813759
88	799286	802497	803940	805363	806785	808200	809609	811011	812400	813782
89	799290	802521	803964	805387	806808	808223	809632	811034	812423	813805
90	799294	802545	803988	805410	806832	808247	809656	811058	812446	813828
91	799298	802569	804012	805434	806856	808270	809679	811081	812469	813851
92	799302	802593	804036	805458	806879	808294	809702	811104	812492	813874
93	799306	802617	804060	805482	806903	808317	809726	811128	812515	813897
94	799310	802641	804084	805505	806926	808341	809749	811151	812538	813920
95	799314	802665	804108	805529	806949	808365	809773	811174	812561	813943
96	799318	802689	804132	805553	806974	808388	809796	811198	812584	813966
97	799322	802713	804156	805577	806997	808412	809819			

10"	11"	12"	13"	14"	15"	16"	17"	18"	19"
107 deg.	108 deg.					109 deg.			
9.813149	9.814535	9.815915	9.817289	9.818656	9.820017	9.821372	9.822721	9.824063	9.825399
9.813172	9.814558	9.815938	9.817312	9.818679	9.820040	9.821394	9.822743	9.824085	9.825421
9.813195	9.814581	9.815961	9.817335	9.818702	9.820063	9.821417	9.822765	9.824108	9.825444
9.813218	9.814604	9.815984	9.817357	9.818724	9.820085	9.821440	9.822788	9.824130	9.825466
9.813242	9.814628	9.816007	9.817380	9.818747	9.820108	9.821462	9.822810	9.824152	9.825488
9.813265	9.814651	9.816030	9.817403	9.818770	9.820130	9.821485	9.822833	9.824174	9.825510
9.813288	9.814674	9.816053	9.817426	9.818793	9.820153	9.821507	9.822855	9.824197	9.825532
9.813311	9.814697	9.816076	9.817449	9.818815	9.820176	9.821530	9.822877	9.824219	9.825554
9.813334	9.814720	9.816099	9.817472	9.818838	9.820198	9.821552	9.822900	9.824241	9.825577
9.813357	9.814743	9.816123	9.817495	9.818861	9.820221	9.821575	9.822922	9.824264	9.825599
9.813381	9.814766	9.816145	9.817517	9.818884	9.820244	9.821597	9.822945	9.824286	9.825621
9.813404	9.814789	9.816168	9.817540	9.818906	9.820266	9.821620	9.822967	9.824308	9.825643
9.813427	9.814812	9.816191	9.817563	9.818929	9.820289	9.821642	9.822990	9.824331	9.825666
9.813450	9.814835	9.816214	9.817586	9.818952	9.820311	9.821665	9.823012	9.824353	9.825688
9.813473	9.814858	9.816236	9.817609	9.818974	9.820334	9.821687	9.823034	9.824375	9.825710
9.813496	9.814881	9.816259	9.817631	9.818997	9.820356	9.821710	9.823057	9.824397	9.825732
9.813519	9.814904	9.816282	9.817654	9.819020	9.820379	9.821732	9.823079	9.824420	9.825754
9.813542	9.814927	9.816305	9.817677	9.819042	9.820402	9.821755	9.823101	9.824442	9.825776
9.813566	9.814950	9.816328	9.817700	9.819065	9.820424	9.821777	9.823124	9.824464	9.825799
9.813589	9.814973	9.816351	9.817723	9.819088	9.820447	9.821800	9.823146	9.824487	9.825821
9.813612	9.814996	9.816374	9.817745	9.819111	9.820470	9.821822	9.823169	9.824509	9.825844
9.813635	9.815019	9.816397	9.817768	9.819133	9.820492	9.821845	9.823191	9.824531	9.825866
9.813658	9.815042	9.816420	9.817791	9.819156	9.820515	9.821867	9.823214	9.824554	9.825888
9.813681	9.815065	9.816443	9.817814	9.819179	9.820537	9.821890	9.823236	9.824576	9.825910
9.813704	9.815088	9.816465	9.817837	9.819201	9.820560	9.821912	9.823258	9.824599	9.825932
9.813727	9.815111	9.816488	9.817859	9.819224	9.820582	9.821935	9.823281	9.824620	9.825954
9.813751	9.815134	9.816511	9.817882	9.819247	9.820605	9.821957	9.823303	9.824643	9.825976
9.813774	9.815157	9.816534	9.817905	9.819270	9.820628	9.821980	9.823325	9.824665	9.825998
9.813797	9.815180	9.816557	9.817928	9.819292	9.820650	9.822002	9.823348	9.824687	9.826020
9.813820	9.815203	9.816580	9.817950	9.819315	9.820673	9.822025	9.823370	9.824710	9.826043
9.813843	9.815226	9.816603	9.817973	9.819338	9.820695	9.822047	9.823393	9.824732	9.826065
9.813866	9.815249	9.816626	9.817996	9.819360	9.820718	9.822070	9.823415	9.824754	9.826087
9.813889	9.815272	9.816649	9.818019	9.819383	9.820741	9.822092	9.823438	9.824776	9.826109
9.813912	9.815295	9.816671	9.818042	9.819405	9.820764	9.822115	9.823460	9.824798	9.826131
9.813935	9.815318	9.816694	9.818064	9.819428	9.820787	9.822137	9.823482	9.824821	9.826153
9.813958	9.815341	9.816717	9.818087	9.819451	9.820808	9.822159	9.823504	9.824843	9.826176
9.813981	9.815364	9.816740	9.818110	9.819474	9.820831	9.822182	9.823527	9.824865	9.826198
9.814005	9.815387	9.816763	9.818133	9.819496	9.820853	9.822204	9.823549	9.824888	9.826220
9.814028	9.815410	9.816786	9.818156	9.819519	9.820876	9.822227	9.823571	9.824910	9.826242
9.814051	9.815433	9.816809	9.818178	9.819542	9.820899	9.822249	9.823594	9.824932	9.826264
9.814074	9.815456	9.816832	9.818201	9.819564	9.820921	9.822272	9.823616	9.824954	9.826286
9.814097	9.815479	9.816855	9.818224	9.819587	9.820944	9.822294	9.823638	9.824977	9.826308
9.814120	9.815502	9.816877	9.818247	9.819609	9.820966	9.822317	9.823661	9.824999	9.826331
9.814143	9.815525	9.816900	9.818269	9.819632	9.820989	9.822339	9.823683	9.825021	9.826353
9.814166	9.815548	9.816923	9.818292	9.819655	9.821011	9.822362	9.823706	9.825043	9.826375
9.814189	9.815571	9.816946	9.818315	9.819678	9.821034	9.822384	9.823728	9.825066	9.826397
9.814212	9.815594	9.816969	9.818338	9.819700	9.821057	9.822407	9.823750	9.825088	9.826419
9.814235	9.815617	9.816992	9.818360	9.819723	9.821079	9.822429	9.823773	9.825110	9.826441
9.814258	9.815640	9.817015	9.818383	9.819746	9.821102	9.822451	9.823795	9.825132	9.826464
9.814281	9.815663	9.817037	9.818406	9.819768	9.821124	9.822474	9.823817	9.825155	9.826486
9.814305	9.815686	9.817060	9.818429	9.819791	9.821147	9.822496	9.823840	9.825177	9.826508
9.814328	9.815708	9.817083	9.818451	9.819813	9.821169	9.822519	9.823862	9.825199	9.826530
9.814351	9.815731	9.817106	9.818474	9.819836	9.821192	9.822541	9.823884	9.825221	9.826552
9.814374	9.815754	9.817129	9.818497	9.819859	9.821214	9.822564	9.823907	9.825243	9.826574
9.814397	9.815777	9.817152	9.818520	9.819881	9.821237	9.822586	9.823929	9.825266	9.826596
9.814420	9.815800	9.817174	9.818542	9.819904	9.821259	9.822608	9.823951	9.825288	9.826618
9.814443	9.815823	9.817198	9.818565	9.819927	9.821282	9.822631	9.823974	9.825310	9.826641
9.814466	9.815846	9.817221	9.818588	9.819949	9.821304	9.822653	9.823996	9.825332	9.826663
9.814489	9.815869	9.817243	9.818611	9.819972	9.821327	9.822676	9.824018	9.825355	9.826685
9.814512	9.815892	9.817266	9.818633	9.819995	9.821349	9.822698	9.824041	9.825377	9.826707
9.814535	9.815915	9.817289	9.818656	9.820017	9.821372	9.822721	9.824063	9.825399	9.826729
49"	48"	47"	46"	45"	44"	43"	42"	41"	40"

	20°	21°	22°	23°	24°	25°	26°	27°	28°	29°
	110 deg.				111 deg.				112 deg.	
0	8.26729	8.28057	8.29370	8.30682	8.31987	8.33287	8.34580	8.35867	8.37148	8.38424
1	8.26771	8.28097	8.29392	8.30704	8.32009	8.33308	8.34601	8.35889	8.37170	8.38446
2	8.26773	8.28097	8.29392	8.30704	8.32009	8.33308	8.34601	8.35889	8.37170	8.38446
3	8.2679	8.28119	8.29413	8.30747	8.32053	8.33352	8.34645	8.35931	8.37212	8.38488
4	8.26817	8.28141	8.29435	8.30769	8.32074	8.33373	8.34666	8.35953	8.37234	8.38510
5	8.26840	8.28163	8.29458	8.30791	8.32100	8.33399	8.34692	8.35979	8.37255	8.38531
6	8.26862	8.28185	8.29480	8.30811	8.32118	8.33416	8.34709	8.35996	8.37276	8.38551
7	8.26884	8.28207	8.29502	8.30833	8.32139	8.33438	8.34731	8.36017	8.37297	8.38571
8	8.26906	8.28229	8.29524	8.30856	8.32161	8.33460	8.34752	8.36038	8.37319	8.38591
9	8.26928	8.28251	8.29546	8.30878	8.32183	8.33481	8.34774	8.36060	8.37340	8.38611
10	8.26950	8.28273	8.29568	8.30900	8.32204	8.33503	8.34793	8.36081	8.37361	8.38631
11	8.26972	8.28295	8.29590	8.30922	8.32226	8.33524	8.34816	8.36103	8.37383	8.38651
12	8.26994	8.28317	8.29612	8.30944	8.32248	8.33546	8.34838	8.36124	8.37404	8.38671
13	8.27016	8.28339	8.29634	8.30966	8.32270	8.33567	8.34859	8.36145	8.37425	8.38691
14	8.27038	8.28361	8.29656	8.30987	8.32291	8.33589	8.34881	8.36167	8.37447	8.38711
15	8.27060	8.28383	8.29678	8.31009	8.32313	8.33611	8.34902	8.36188	8.37468	8.38731
16	8.27082	8.28405	8.29700	8.31031	8.32335	8.33632	8.34924	8.36209	8.37489	8.38751
17	8.27105	8.28427	8.29722	8.31052	8.32356	8.33654	8.34945	8.36231	8.37510	8.38771
18	8.27127	8.28449	8.29744	8.31074	8.32378	8.33675	8.34967	8.36252	8.37532	8.38791
19	8.27149	8.28471	8.29766	8.31096	8.32400	8.33697	8.34988	8.36274	8.37553	8.38811
20	8.27171	8.28493	8.29788	8.31118	8.32421	8.33719	8.35010	8.36295	8.37574	8.38831
21	8.27193	8.28515	8.29810	8.31140	8.32443	8.33740	8.35031	8.36316	8.37595	8.38851
22	8.27215	8.28537	8.29832	8.31161	8.32465	8.33762	8.35053	8.36338	8.37617	8.38871
23	8.27237	8.28559	8.29854	8.31183	8.32486	8.33783	8.35074	8.36359	8.37638	8.38891
24	8.27259	8.28581	8.29876	8.31205	8.32508	8.33805	8.35096	8.36380	8.37659	8.38911
25	8.27281	8.28603	8.29898	8.31227	8.32530	8.33826	8.35117	8.36402	8.37680	8.38931
26	8.27303	8.28625	8.29920	8.31249	8.32551	8.33848	8.35139	8.36423	8.37702	8.38951
27	8.27325	8.28646	8.29941	8.31270	8.32573	8.33869	8.35160	8.36444	8.37723	8.38971
28	8.27347	8.28668	8.29963	8.31292	8.32595	8.33891	8.35181	8.36465	8.37744	8.38991
29	8.27370	8.28690	8.30005	8.31314	8.32616	8.33913	8.35203	8.36487	8.37765	8.39011
30	8.27392	8.28712	8.30027	8.31335	8.32638	8.33934	8.35224	8.36509	8.37787	8.39031
31	8.27414	8.28734	8.30049	8.31357	8.32659	8.33956	8.35246	8.36530	8.37808	8.39051
32	8.27436	8.28756	8.30071	8.31379	8.32681	8.33977	8.35267	8.36551	8.37829	8.39071
33	8.27458	8.28778	8.30093	8.31401	8.32703	8.33999	8.35289	8.36573	8.37850	8.39091
34	8.27480	8.28800	8.30114	8.31422	8.32724	8.34020	8.35310	8.36594	8.37872	8.39111
35	8.27502	8.28822	8.30136	8.31444	8.32746	8.34042	8.35332	8.36615	8.37893	8.39131
36	8.27524	8.28844	8.30158	8.31466	8.32768	8.34063	8.35353	8.36637	8.37914	8.39151
37	8.27546	8.28866	8.30180	8.31488	8.32789	8.34085	8.35375	8.36658	8.37935	8.39171
38	8.27568	8.28888	8.30202	8.31509	8.32811	8.34107	8.35396	8.36679	8.37957	8.39191
39	8.27590	8.28910	8.30224	8.31531	8.32833	8.34128	8.35417	8.36701	8.37978	8.39211
40	8.27612	8.28932	8.30246	8.31553	8.32854	8.34150	8.35439	8.36722	8.37999	8.39231
41	8.27634	8.28954	8.30267	8.31575	8.32876	8.34171	8.35460	8.36743	8.38020	8.39251
42	8.27656	8.28976	8.30289	8.31596	8.32898	8.34193	8.35482	8.36765	8.38042	8.39271
43	8.27678	8.28998	8.30311	8.31618	8.32919	8.34214	8.35503	8.36786	8.38063	8.39291
44	8.27700	8.29020	8.30333	8.31640	8.32941	8.34236	8.35525	8.36807	8.38084	8.39311
45	8.27722	8.29042	8.30355	8.31662	8.32962	8.34257	8.35546	8.36829	8.38105	8.39331
46	8.27744	8.29064	8.30377	8.31683	8.32984	8.34279	8.35567	8.36850	8.38127	8.39351
47	8.27766	8.29085	8.30398	8.31705	8.33006	8.34300	8.35589	8.36871	8.38148	8.39371
48	8.27788	8.29107	8.30420	8.31727	8.33027	8.34322	8.35610	8.36893	8.38169	8.39391
49	8.27811	8.29129	8.30442	8.31749	8.33049	8.34343	8.35632	8.36914	8.38190	8.39411
50	8.27833	8.29151	8.30464	8.31770	8.33071	8.34365	8.35653	8.36935	8.38211	8.39431
51	8.27855	8.29173	8.30486	8.31792	8.33092	8.34386	8.35675	8.36957	8.38233	8.39451
52	8.27877	8.29195	8.30508	8.31814	8.33114	8.34408	8.35696	8.36978	8.38254	8.39471
53	8.27899	8.29217	8.30529	8.31836	8.33135	8.34429	8.35717	8.36999	8.38275	8.39491
54	8.27921	8.29239	8.30551	8.31857	8.33157	8.34451	8.35739	8.37021	8.38296	8.39511
55	8.27943	8.29261	8.30573	8.31879	8.33179	8.34472	8.35760	8.37042	8.38318	8.39531
56	8.27965	8.29283	8.30595	8.31901	8.33200	8.34494	8.35782	8.37063	8.38339	8.39551
57	8.27987	8.29305	8.30617	8.31922	8.33222	8.34515	8.35803	8.37084	8.38360	8.39571
58	8.28009	8.29327	8.30639	8.31944	8.33244	8.34537	8.35824	8.37106	8.38381	8.39591
59	8.28031	8.29349	8.30660	8.31966	8.33265	8.34558	8.35846	8.37127	8.38402	8.39611
60	8.28053	8.29370	8.30682	8.31987	8.33287	8.34580	8.35867	8.37148	8.38424	8.39631
	39°	38°	37°	36°	35°	34°	33°	32°	31°	30°

1800.

Log. Haversine. (1)

7 Hours.

	30"	31"	32"	33"	34"	35"	36"	37"	38"	39"
112 deg.	113 deg.					114 deg.				
839633	9.840956	842213	843164	844710	845949	847183	848410	849632	850848	852060
839714	840977	842234	843485	844731	845970	847203	848431	849653	850868	852079
839735	840998	842255	843506	844751	845990	847224	848451	849673	850888	852099
839756	841019	842276	843527	844772	846011	847244	848472	849693	850909	852119
839777	9.841040	9.842297	9.843548	9.844793	9.846032	9.847265	9.848492	9.849714	9.850929	9.852136
839798	841061	842318	843568	844813	846052	847285	848512	849734	850949	852155
839819	841082	842339	843589	844834	846073	847306	848533	849754	850970	852176
839840	841103	842359	843610	844855	846094	847326	848553	849774	850990	852197
39862	9.841124	9.842380	9.843631	9.844875	9.846114	9.847347	9.848574	9.849795	9.851010	9.852216
39883	841145	842401	843652	844896	846135	847367	848594	849815	851030	852236
39904	841166	842422	843672	844917	846155	847388	848615	849835	851050	852257
39925	841187	842443	843693	844938	846176	847408	848635	849855	851070	852278
19946	9.841208	9.842464	9.843714	9.844958	9.846196	9.847429	9.848655	9.849876	9.851091	9.852297
19967	841229	842485	843735	844979	846217	847449	848676	849896	851111	852317
19988	841250	842506	843756	845000	846238	847470	848696	849917	851131	852338
10009	841271	842527	843776	845020	846258	847490	848716	849937	851151	852359
10030	9.841292	9.842547	9.843797	9.845041	9.846279	9.847511	9.848737	9.849957	9.851172	9.852379
10051	841313	842568	843818	845062	846299	847531	848757	849977	851192	852399
10072	841334	842589	843839	845082	846320	847552	848778	849998	851212	852420
10093	841355	842610	843859	845103	846340	847572	848798	850018	851232	852441
0114	9.841376	9.842631	9.843880	9.845124	9.846361	9.847593	9.848818	9.850038	9.851254	9.852470
0136	841397	842652	843901	845144	846382	847613	848839	850058	851273	852491
0157	841418	842673	843922	845165	846402	847634	848859	850079	851293	852512
0178	841439	842694	843943	845186	846423	847654	848879	850099	851313	852533
0199	9.841460	9.842714	9.843963	9.845206	9.846443	9.847675	9.848900	9.850119	9.851333	9.852549
0220	841481	842735	843984	845227	846464	847695	848921	850140	851353	852570
0241	841501	842756	844005	845248	846485	847716	848941	850160	851373	852591
0262	841522	842777	844026	845268	846505	847736	848961	850180	851394	852612
0283	9.841543	9.842798	9.844046	9.845289	9.846526	9.847756	9.848981	9.850200	9.851414	9.852630
0304	841564	842819	844067	845310	846546	847777	849002	850221	851434	852651
0325	841585	842840	844088	845330	846567	847797	849022	850241	851454	852672
0346	841606	842860	844109	845351	846587	847818	849042	850261	851474	852693
10367	9.841627	9.842881	9.844129	9.845372	9.846608	9.847838	9.849063	9.850282	9.851494	9.852709
10388	841648	842902	844150	845392	846628	847859	849083	850302	851514	852730
10409	841669	842923	844171	845413	846649	847879	849104	850322	851535	852751
10430	841690	842944	844192	845434	846670	847900	849124	850342	851555	852772
40451	9.841711	9.842965	9.844212	9.845454	9.846690	9.847920	9.849144	9.850363	9.851575	9.852789
40472	841732	842986	844233	845475	846711	847941	849165	850383	851595	852810
40493	841753	843006	844254	845495	846731	847961	849185	850403	851615	852831
840515	841774	843027	844275	845516	846752	847981	849205	850423	851635	852852
840536	9.841795	9.843048	9.844295	9.845537	9.846772	9.848002	9.849226	9.850444	9.851656	9.852870
840557	841816	843069	844316	845557	846793	848022	849246	850464	851676	852891
840578	841837	843090	844337	845578	846813	848043	849266	850484	851696	852912
840599	841858	843111	844358	845599	846834	848063	849287	850504	851716	852933
840620	9.841879	9.843131	9.844378	9.845619	9.846854	9.848084	9.849307	9.850525	9.851736	9.852949
840641	841899	843152	844399	845640	846875	848104	849327	850545	851756	852970
840662	841920	843173	844420	845661	846896	848125	849348	850565	851777	852991
840683	841941	843194	844440	845681	846916	848145	849368	850585	851797	853012
840704	9.841962	9.843215	9.844461	9.845702	9.846937	9.848165	9.849388	9.850606	9.851817	9.853029
840725	841983	843236	844482	845722	846957	848186	849409	850626	851837	853050
840746	842004	843256	844503	845743	846978	848206	849429	850646	851857	853071
840767	842025	843277	844523	845764	846998	848227	849449	850666	851877	853092
840788	9.842046	9.843298	9.844544	9.845784	9.847019	9.848247	9.849470	9.850688	9.851897	9.853109
840809	842067	843319	844565	845805	847039	848268	849490	850707	851917	853130
840830	842088	843340	844586	845826	847060	848288	849510	850727	851938	853151
840851	842109	843360	844606	845846	847080	848308	849530	850747	851958	853172
840872	9.842130	9.843381	9.844627	9.845867	9.847101	9.848329	9.849551	9.850767	9.851978	9.853189
840893	842150	843402	844648	845887	847121	848349	849571	850788	851998	853210
840914	842171	843423	844668	845908	847142	848370	849592	850808	852018	853231
840935	842192	843444	844689	845929	847162	848390	849612	850828	852038	853252
840956	9.842213	9.843464	9.844710	9.845949	9.847183	9.848410	9.849632	9.850848	9.852059	9.853270
20	20	21	22	23	24	25	26	27	28	29

	40°	41°	42°	43°	44°	45°	46°	47°	48°
	115 deg.				116 deg.				117 d.
0	852058	853263	854461	855654	856841	858022	859198	860367	861532
15	852078	853283	854481	855674	856861	858042	859217	860387	861551
30	852099	853303	854501	855694	856880	858061	859237	860406	861570
45	852119	853323	854521	855713	856900	858081	859256	860425	861590
1	852139	853343	854541	855733	856920	858101	859276	860445	861609
15	852159	853363	854561	855753	856940	858120	859295	860465	861628
30	852179	853383	854581	855773	856959	858140	859315	860484	861648
45	852199	853403	854601	855793	856979	858160	859334	860503	861667
1	852219	853423	854621	855813	856999	858179	859354	860523	861686
15	852239	853443	854640	855832	857018	858199	859374	860542	861705
30	852260	853463	854660	855852	857038	858219	859393	860562	861725
45	852280	853483	854680	855872	857058	858238	859413	860581	861744
1	852300	853503	854700	855892	857078	858258	859432	860601	861764
15	852320	853523	854720	855912	857097	858278	859452	860620	861783
30	852340	853543	854740	855931	857117	858297	859471	860640	861803
45	852360	853563	854760	855951	857137	858317	859491	860659	861822
1	852380	853583	854780	855971	857157	858336	859510	860679	861841
15	852400	853603	854800	855991	857176	858356	859530	860698	861860
30	852420	853623	854820	856011	857196	858375	859549	860717	861880
45	852440	853643	854840	856030	857216	858395	859569	860737	861899
1	852460	853663	854860	856050	857235	858415	859588	860756	861918
15	852480	853683	854880	856070	857255	858434	859608	860775	861938
30	852500	853703	854900	856090	857275	858454	859627	860795	861957
45	852520	853723	854920	856110	857294	858474	859647	860814	861976
1	852540	853743	854940	856129	857314	858493	859666	860834	861996
15	852561	853763	854959	856149	857334	858513	859686	860853	862015
30	852581	853783	854979	856169	857354	858532	859705	860873	862034
45	852601	853803	854999	856189	857373	858552	859725	860892	862054
1	852621	853823	855019	856209	857393	858571	859744	860911	862073
15	852641	853843	855038	856228	857413	858591	859764	860931	862092
30	852661	853863	855058	856248	857432	858611	859783	860950	862111
45	852681	853883	855078	856268	857452	858630	859803	860970	862131
1	852701	853903	855098	856288	857472	858650	859822	860989	862150
15	852721	853923	855118	856307	857492	858669	859842	861008	862169
30	852742	853943	855138	856327	857511	858689	859861	861028	862189
45	852762	853962	855158	856347	857531	858709	859881	861047	862208
1	852782	853983	855178	856367	857550	858728	859900	861067	862227
15	852802	854003	855197	856387	857570	858748	859920	861086	862246
30	852822	854022	855217	856406	857590	858767	859939	861105	862266
45	852842	854042	855237	856426	857609	858787	859959	861125	862285
1	852862	854062	855257	856446	857629	858807	859978	861144	862304
15	852882	854082	855277	856466	857649	858826	859998	861164	862324
30	852902	854102	855297	856485	857669	858846	860017	861183	862343
45	852922	854122	855317	856505	857688	858865	860037	861202	862363
1	852942	854142	855336	856525	857708	858885	860056	861222	862382
15	852962	854162	855356	856545	857727	858904	860075	861241	862401
30	852982	854182	855376	856565	857747	858924	860095	861260	862420
45	853002	854202	855396	856584	857767	858943	860114	861280	862440
1	853022	854222	855416	856604	857786	858963	860134	861299	862459
15	853042	854242	855436	856624	857806	858983	860153	861318	862478
30	853062	854262	855456	856644	857826	859002	860172	861338	862497
45	853082	854282	855475	856663	857845	859022	860192	861357	862516
1	853102	854302	855495	856683	857865	859041	860212	861377	862535
15	853122	854322	855515	856703	857885	859061	860231	861396	862555
30	853142	854342	855535	856723	857904	859080	860251	861415	862574
45	853162	854362	855555	856742	857924	859100	860270	861435	862594
1	853182	854382	855575	856762	857944	859120	860290	861454	862613
15	853203	854403	855594	856782	857963	859139	860309	861473	862632
30	853223	854423	855614	856801	857983	859159	860329	861493	862651
45	853243	854443	855634	856821	858002	859178	860348	861512	862671
1	853263	854463	855654	856841	858022	859198	860367	861532	862690
15	853283	854483	855674	856861	858042	859217	860387	861551	862709
30	853303	854503	855694	856880	858061	859237	860406	861570	862728
45	853323	854523	855713	856900	858081	859256	860425	861590	862747
1	853343	854543	855733	856920	858101	859276	860445	861609	862766
15	853363	854563	855753	856940	858120	859295	860465	861628	862785
30	853383	854583	855773	856959	858140	859315	860484	861648	862804
45	853403	854603	855793	856979	858160	859334	860503	861667	862823
1	853423	854623	855813	856999	858179	859354	860523	861686	862842
15	853443	854643	855832	857018	858199	859374	860542	861705	862861
30	853463	854663	855852	857038	858219	859393	860562	861725	862880
45	853483	854683	855872	857058	858238	859413	860581	861744	862899
1	853503	854703	855892	857078	858258	859432	860601	861764	862918
15	853523	854723	855912	857097	858278	859452	860620	861783	862937
30	853543	854743	855931	857117	858297	859471	860640	861803	862956
45	853563	854763	855951	857137	858317	859491	860659	861822	862975
1	853583	854783	855971	857157	858336	859510	860679	861841	862994
15	853603	854803	855991	857176	858356	859530	860698	861860	863013
30	853623	854823	856011	857196	858375	859549	860717	861880	863032
45	853643	854843	856030	857216	858395	859569	860737	861899	863051
1	853663	854863	856050	857235	858415	859588	860756	861918	863070
15	853683	854883	856070	857255	858434	859608	860775	861938	863089
30	853703	854903	856090	857275	858454	859627	860795	861957	863108
45	853723	854923	856110	857294	858474	859647	860814	861976	863127
1	853743	854943	856129	857314	858493	859666	860834	861996	863146
15	853763	854959	856149	857334	858513	859686	860853	862015	863165
30	853783	854979	856169	857354	858532	859705	860873	862034	863184
45	853803	854999	856189	857373	858552	859725	860892	862054	863203
1	853823	855019	856209	857393	858571	859744	860911	862073	863222
15	853843	855038	856228	857413	858591	859764	860931	862092	863241
30	853863	855058	856248	857432	858611	859783	860950	862111	863260
45	853883	855078	856268	857452	858630	859803	860970	862131	863279
1	853903	855098	856288	857472	858650	859822	860989	862150	863298
15	853923	855118	856307	857492	858669	859842	861008	862169	863317
30	853943	855138	856327	857511	858689	859861	861028	862189	863336
45	853962	855158	856347	857531	858709	859881	861047	862208	863355
1	853983	855178	856367	857550	858728	859900	861067	862227	863374
15	854003	855197	856387	857570	858748	859920	861086	862246	863393
30	854022	855217	856406	857590	858767	859939	861105	862266	863412
45	854042	855237	856426	857609	858787	859959	861125	862285	863431
1	854062	855257	856446	857629	858807	859978	861144	862304	863450
15	854082	855277	856466	857649	858826	859998	861164	862324	863469
30	854102	855297	856485	857669	858846	860017	861183	862343	863488
45	854122	855317	856505	857688	858865	860037	861202	862363	863507
1	854142	855336	856525	857708	858885	860056	861222	862382	863526
15	854162	855356	856545	857727	858904	860075	861241	862401	863545
30	854182	855376	856565	857747	858924	860095	861260	862420	863564
45	854202	855396	856584	857767	858943	860114	861280	862440	863583
1	854222	855416</							

1 Hour.

Log. Havreines. (1)

1 Hour.

50"	51"	52"	53"	54"	55"	56"	57"	58"	59"
117 deg.	118 deg.					119 deg.			
862343	861990	866131	867267	868397	869522	870641	871754	872862	873964
862362	863004	866150	867296	868416	869540	870659	871773	872880	873981
862381	863023	866169	867305	868435	869559	870678	871791	872899	874001
862390	863047	866186	867324	868454	869578	870697	871810	872917	874019
862391	863066	866207	867342	868472	869597	870715	871828	872936	874038
862398	863085	866226	867361	868491	869615	870734	871847	872954	874056
862398	863104	866245	867380	868510	869634	870752	871865	872973	874074
862397	863123	866264	867399	868529	869653	870771	871884	872991	874093
862396	863142	866283	867418	868547	869671	870790	871902	873009	874111
862395	863161	866302	867437	868566	869690	870808	871921	873028	874129
862394	863180	866321	867456	868585	869709	870827	871939	873046	874148
862393	863199	866340	867475	868604	869727	870845	871958	873065	874166
862392	863218	866359	867493	868623	869746	870864	871976	873083	874184
862391	863237	866378	867512	868641	869765	870882	871995	873101	874203
862390	863257	866397	867531	868660	869783	870901	872013	873120	874221
862389	863276	866416	867550	868679	869802	870920	872032	873138	874239
862388	863295	866435	867569	868698	869821	870938	872050	873157	874257
862387	863314	866454	867588	868716	869839	870957	872069	873175	874276
862386	863333	866473	867607	868735	869858	870975	872087	873193	874294
862385	863352	866492	867625	868754	869877	870994	872106	873212	874312
862384	863371	866510	867644	868773	869895	871013	872124	873230	874331
862383	863390	866529	867663	868792	869914	871031	872143	873249	874349
862382	863409	866548	867682	868810	869933	871050	872161	873267	874367
862381	863428	866567	867701	868829	869951	871068	872180	873285	874385
862380	863447	866586	867720	868848	869970	871087	872198	873304	874404
862379	863466	866605	867739	868866	869989	871105	872216	873322	874422
862378	863485	866624	867757	868885	870007	871124	872235	873341	874440
862377	863504	866643	867776	868904	870026	871142	872253	873359	874459
862376	863523	866662	867795	868923	870045	871161	872272	873377	874477
862375	863542	866681	867814	868941	870063	871180	872290	873396	874495
862374	863561	866700	867833	868960	870082	871198	872309	873414	874514
862373	863580	866719	867852	868979	870100	871217	872327	873433	874532
862372	863599	866738	867870	868998	870119	871235	872346	873451	874550
862371	863618	866756	867889	869016	870138	871254	872364	873469	874568
862370	863637	866775	867908	869035	870157	871272	872383	873487	874587
862369	863656	866794	867927	869054	870176	871291	872401	873506	874605
862368	863675	866813	867946	869073	870194	871310	872420	873524	874623
862367	863694	866832	867965	869091	870212	871328	872438	873542	874641
862366	863713	866851	867983	869110	870231	871347	872457	873561	874660
862365	863732	866870	868002	869129	870250	871365	872475	873579	874678
862364	863751	866889	868021	869148	870268	871384	872493	873598	874696
862363	863770	866908	868040	869166	870287	871402	872512	873616	874714
862362	863789	866927	868059	869185	870306	871421	872530	873634	874733
862361	863808	866946	868078	869204	870324	871439	872549	873653	874751
862360	863827	866965	868096	869222	870343	871458	872567	873671	874769
862359	863846	866984	868115	869241	870362	871476	872586	873689	874787
862358	863865	867002	868134	869260	870380	871495	872604	873708	874806
862357	863884	867021	868153	869278	870399	871513	872623	873726	874824
862356	863903	867040	868172	869297	870417	871532	872641	873744	874842
862355	863922	867059	868190	869316	870436	871550	872660	873763	874860
862354	863941	867078	868209	869335	870455	871569	872678	873781	874879
862353	863960	867097	868228	869354	870473	871588	872696	873799	874897
862352	863979	867116	868247	869372	870492	871606	872715	873818	874915
862351	863998	867135	868266	869391	870510	871624	872733	873836	874934
862350	864017	867154	868284	869410	870529	871643	872752	873854	874952
862349	864036	867172	868303	869428	870548	871662	872770	873873	874970
862348	864055	867191	868322	869447	870566	871680	872788	873891	874988
862347	864074	867210	868341	869466	870585	871699	872807	873909	875007
862346	864093	867229	868360	869484	870604	871717	872825	873928	875025
862345	864112	867248	868379	869503	870622	871736	872844	873946	875043
862344	864131	867267	868397	869522	870641	871754	872862	873964	875061

	0"	1"	2"	3"	4"	5"	6"	7"	8"	9"
	120 deg.				121 deg.				122 deg.	
0	9.875061	9.876133	9.877236	9.878319	9.879394	9.880463	9.881527	9.882585	9.883639	9.884688
1	875079	876171	877266	878337	879411	880431	881445	882463	883486	884504
2	875098	876189	877274	878355	879429	880493	881502	882521	883544	884562
3	875116	876207	877292	878373	879447	880516	881590	882633	883691	884711
4	875134	876225	877311	878391	879465	880534	881598	882656	883709	884761
5	875152	876243	877329	878409	879483	880552	881615	882673	883726	884778
6	875171	876261	877347	878426	879501	880570	881633	882691	883744	884796
7	875189	876280	877365	878444	879519	880587	881651	882709	883761	884814
8	875207	876298	877383	878462	879536	880605	881668	882726	883779	884832
9	875225	876316	877401	878480	879554	880623	881686	882744	883801	884850
10	875244	876334	877419	878498	879572	880641	881704	882761	883814	884868
11	875262	876352	877437	878516	879590	880659	881721	882779	883831	884886
12	875280	876370	877455	878534	879608	880676	881739	882796	883848	884904
13	875298	876388	877473	878552	879626	880694	881757	882814	883866	884922
14	875316	876406	877491	878570	879644	880711	881774	882832	883884	884940
15	875335	876425	877509	878588	879661	880729	881792	882849	883901	884958
16	875353	876443	877527	878606	879679	880747	881810	882867	883918	884976
17	875371	876461	877545	878624	879697	880765	881827	882885	883936	884994
18	875389	876479	877563	878642	879715	880783	881845	882902	883953	885012
19	875407	876497	877581	878660	879733	880800	881863	882919	883971	885030
20	875426	876515	877599	878678	879751	880818	881880	882937	883989	885048
21	875444	876533	877617	878696	879769	880836	881898	882955	884006	885066
22	875462	876551	877635	878713	879787	880854	881916	882972	884023	885084
23	875480	876569	877653	878731	879804	880871	881933	882990	884041	885102
24	875498	876588	877671	878749	879822	880889	881951	883007	884058	885120
25	875517	876606	877689	878767	879840	880907	881969	883024	884076	885138
26	875535	876624	877707	879785	879858	880925	881986	883042	884093	885156
27	875553	876642	877725	879803	879875	880942	882004	883060	884111	885174
28	875571	876660	877743	879821	879893	880960	882022	883078	884128	885192
29	875589	876678	877761	879839	879911	880978	882039	883095	884146	885210
30	875608	876696	877779	879857	879929	880996	882057	883113	884164	885228
31	875626	876714	877797	879875	879947	881014	882074	883130	884180	885246
32	875644	876732	877815	879893	879965	881031	882092	883148	884198	885264
33	875662	876750	877833	879911	879982	881049	882110	883165	884216	885282
34	875680	876769	877851	879929	880000	881067	882127	883183	884233	885300
35	875698	876787	877869	879946	880018	881084	882145	883200	884250	885318
36	875717	876805	877887	879964	880036	881102	882163	883218	884268	885336
37	875735	876823	877905	879982	880054	881120	882180	883235	884285	885354
38	875753	876841	877923	879999	880071	881137	882198	883253	884303	885372
39	875771	876859	877941	879918	880089	881155	882216	883271	884320	885390
40	875789	876877	877959	879936	880107	881173	882233	883288	884338	885408
41	875808	876895	877977	879954	880125	881191	882251	883306	884355	885426
42	875826	876913	877995	879972	880143	881209	882268	883323	884372	885444
43	875844	876931	878013	879990	880160	881226	882285	883341	884390	885462
44	875862	876949	878031	8799107	880179	881244	882303	883358	884407	885480
45	875880	876967	878049	879925	880196	881261	882321	883376	884425	885498
46	875898	876986	878067	879943	880214	881279	882339	883393	884442	885516
47	875917	877004	878085	879961	880232	881297	882357	883411	884460	885534
48	875935	877022	878103	879979	880250	881315	882374	883428	884477	885552
49	875953	877040	878121	879997	880267	881332	882392	883446	884495	885570
50	875971	877058	878139	879915	880285	881350	882409	883463	884512	885588
51	875989	877076	878157	879933	880303	881368	882427	883481	884529	885606
52	876007	877094	878175	879951	880321	881385	882444	883498	884547	885624
53	876026	877112	878193	879969	880339	881403	882462	883516	884564	885642
54	876044	877130	878211	879986	880356	881421	882480	883533	884581	885660
55	876062	877148	878229	8799304	880374	881439	882497	883551	884599	885678
56	876080	877166	878247	8799322	880392	881456	882515	883568	884617	885696
57	876098	877184	878265	8799340	880410	881471	882533	883586	884634	885714
58	876116	877202	878283	8799358	880427	881492	882550	883604	884651	885732
59	876134	877220	878301	8799376	880445	881509	882568	883621	884669	885750
60	876153	877238	878319	8799394	880463	881527	882585	883639	884688	885768
59"	59"	58"	57"	56"	55"	54"	53"	52"	51"	50"

10 Hrs.

Log. Haverine. (C)

8 Hours.

10"	11"	12"	13"	14"	15"	16"	17"	18"	19"
122 deg.	123 deg.	124 deg.	125 deg.	126 deg.	127 deg.	128 deg.	129 deg.	130 deg.	131 deg.
9.885798	9.886753	9.887787	9.888823	9.889844	9.890860	9.891870	9.892875	9.893874	9.894869
9.885746	9.886783	9.887814	9.888840	9.889861	9.890876	9.891887	9.892891	9.893891	9.894885
9.885732	9.886800	9.887831	9.888857	9.889878	9.890893	9.891903	9.892908	9.893908	9.894901
9.885780	9.886817	9.887848	9.888874	9.889895	9.890910	9.891920	9.892925	9.893924	9.894916
9.885798	9.886834	9.887866	9.888891	9.889912	9.890927	9.891937	9.892941	9.893941	9.894935
9.885815	9.886853	9.887883	9.888908	9.889929	9.890944	9.891954	9.892958	9.893957	9.894951
9.885832	9.886869	9.887900	9.888926	9.889946	9.890961	9.891971	9.892975	9.893974	9.894968
9.885850	9.886886	9.887917	9.888943	9.889963	9.890978	9.891987	9.892992	9.893991	9.894985
9.885867	9.886903	9.887934	9.888960	9.889980	9.890995	9.892004	9.893008	9.894007	9.895001
9.885884	9.886920	9.887951	9.888977	9.889997	9.891011	9.892021	9.893025	9.894024	9.895017
9.885901	9.886938	9.887969	9.888994	9.890014	9.891028	9.892038	9.893042	9.894040	9.895034
9.885919	9.886955	9.887985	9.889011	9.890031	9.891045	9.892054	9.893058	9.894057	9.895050
9.885936	9.886972	9.888003	9.889028	9.890048	9.891062	9.892071	9.893075	9.894074	9.895067
9.885954	9.886990	9.888020	9.889045	9.890065	9.891079	9.892088	9.893092	9.894090	9.895083
9.885971	9.887007	9.888037	9.889062	9.890082	9.891096	9.892105	9.893108	9.894107	9.895100
9.885988	9.887024	9.888054	9.889079	9.890098	9.891113	9.892121	9.893125	9.894123	9.895116
9.886006	9.887041	9.888071	9.889096	9.890115	9.891130	9.892138	9.893142	9.894140	9.895133
9.886023	9.887058	9.888088	9.889113	9.890132	9.891146	9.892155	9.893158	9.894157	9.895149
9.886040	9.887075	9.888105	9.889130	9.890149	9.891163	9.892172	9.893175	9.894173	9.895166
9.886058	9.887093	9.888123	9.889147	9.890166	9.891180	9.892189	9.893192	9.894190	9.895182
9.886075	9.887110	9.888140	9.889164	9.890183	9.891197	9.892205	9.893209	9.894206	9.895199
9.886092	9.887127	9.888157	9.889181	9.890200	9.891214	9.892222	9.893225	9.894223	9.895215
9.886109	9.887144	9.888174	9.889198	9.890217	9.891231	9.892239	9.893242	9.894240	9.895232
9.886127	9.887161	9.888191	9.889215	9.890234	9.891247	9.892256	9.893259	9.894256	9.895248
9.886144	9.887179	9.888208	9.889232	9.890251	9.891264	9.892272	9.893275	9.894273	9.895265
9.886161	9.887196	9.888225	9.889249	9.890268	9.891281	9.892289	9.893292	9.894289	9.895281
9.886179	9.887213	9.888242	9.889266	9.890285	9.891298	9.892306	9.893309	9.894306	9.895298
9.886196	9.887230	9.888259	9.889283	9.890302	9.891315	9.892323	9.893325	9.894322	9.895314
9.886213	9.887248	9.888277	9.889300	9.890319	9.891332	9.892339	9.893342	9.894339	9.895331
9.886230	9.887265	9.888294	9.889317	9.890336	9.891348	9.892356	9.893359	9.894356	9.895347
9.886248	9.887282	9.888311	9.889334	9.890353	9.891361	9.892373	9.893375	9.894372	9.895364
9.886265	9.887299	9.888328	9.889351	9.890369	9.891378	9.892380	9.893382	9.894379	9.895370
9.886282	9.887316	9.888345	9.889368	9.890386	9.891399	9.892406	9.893409	9.894405	9.895397
9.886299	9.887333	9.888362	9.889385	9.890403	9.891416	9.892423	9.893425	9.894422	9.895414
9.886317	9.887351	9.888379	9.889402	9.890420	9.891433	9.892440	9.893442	9.894439	9.895430
9.886334	9.887368	9.888396	9.889419	9.890437	9.891449	9.892457	9.893458	9.894455	9.895442
9.886351	9.887385	9.888413	9.889436	9.890454	9.891466	9.892473	9.893475	9.894472	9.895463
9.886369	9.887402	9.888430	9.889453	9.890471	9.891483	9.892490	9.893492	9.894488	9.895479
9.886386	9.887419	9.888448	9.889470	9.890488	9.891500	9.892507	9.893508	9.894505	9.895496
9.886403	9.887437	9.888465	9.889487	9.890505	9.891517	9.892524	9.893525	9.894521	9.895512
9.886420	9.887454	9.888482	9.889504	9.890522	9.891534	9.892540	9.893542	9.894538	9.895529
9.886438	9.887471	9.888499	9.889521	9.890539	9.891550	9.892557	9.893559	9.894554	9.895545
9.886455	9.887488	9.888516	9.889538	9.890556	9.891567	9.892574	9.893575	9.894571	9.895562
9.886472	9.887505	9.888533	9.889555	9.890572	9.891584	9.892591	9.893592	9.894587	9.895578
9.886489	9.887522	9.888550	9.889572	9.890589	9.891601	9.892607	9.893608	9.894604	9.895595
9.886507	9.887540	9.888567	9.889589	9.890606	9.891618	9.892624	9.893625	9.894621	9.895611
9.886524	9.887557	9.888584	9.889606	9.890623	9.891635	9.892641	9.893642	9.894637	9.895628
9.886541	9.887574	9.888601	9.889623	9.890640	9.891651	9.892657	9.893658	9.894654	9.895644
9.886558	9.887591	9.888618	9.889640	9.890657	9.891668	9.892674	9.893675	9.894670	9.895660
9.886576	9.887608	9.888635	9.889657	9.890674	9.891685	9.892691	9.893691	9.894687	9.895677
9.886593	9.887625	9.888653	9.889674	9.890691	9.891702	9.892708	9.893708	9.894703	9.895693
9.886610	9.887643	9.888670	9.889691	9.890708	9.891719	9.892724	9.893725	9.894720	9.895710
9.886628	9.887660	9.888687	9.889708	9.890725	9.891735	9.892741	9.893741	9.894736	9.895726
9.886645	9.887677	9.888704	9.889725	9.890741	9.891752	9.892758	9.893758	9.894753	9.895743
9.886662	9.887694	9.888721	9.889742	9.890758	9.891769	9.892775	9.893775	9.894770	9.895759
9.886679	9.887711	9.888738	9.889759	9.890775	9.891786	9.892791	9.893791	9.894786	9.895776
9.886696	9.887728	9.888755	9.889776	9.890792	9.891803	9.892808	9.893808	9.894803	9.895792
9.886714	9.887745	9.888772	9.889793	9.890809	9.891819	9.892825	9.893824	9.894819	9.895808
9.886731	9.887763	9.888789	9.889810	9.890826	9.891836	9.892841	9.893841	9.894836	9.895825
9.886748	9.887780	9.888806	9.889827	9.890843	9.891853	9.892858	9.893858	9.894852	9.895841
9.886765	9.887797	9.888823	9.889844	9.890860	9.891870	9.892875	9.893874	9.894869	9.895856

15 Hours.

15 Hours.

	20"	21"	22"	23"	24"	25"	26"	27"	28"	29"					
	125 deg.					126 deg.					127 deg.				
0	9.895855	9.895829	9.897820	9.898794	9.899762	9.900725	9.901682	9.902635	9.903585	9.904535					
15	895874	896858	897836	898810	899778	900741	901698	902651	903598	904545					
30	895891	896874	897853	898826	899794	900757	901714	902667	903614	904561					
45	895907	896891	897869	898842	899810	900773	901730	902682	903630	904577					
60	895924	896907	897885	898858	899826	900789	901746	902698	903645	904592					
75	895940	896923	897901	898874	899842	900805	901762	902714	903661	904608					
90	895956	896939	897918	898891	899859	900821	901778	902730	903677	904624					
105	895973	896956	897934	898907	899874	900837	901794	902746	903693	904641					
120	895989	896972	897950	898923	899890	900853	901810	902762	903714	904668					
135	896006	896989	897967	898939	899906	900869	901826	902778	903730	904695					
150	896022	897005	897983	898955	899923	900885	901842	902793	903745	904722					
165	896039	897021	897999	898971	899939	900901	901857	902809	903761	904738					
180	896055	897038	898015	898988	899955	900917	901873	902825	903777	904754					
195	896071	897054	898032	899004	899971	900933	901889	902841	903793	904770					
210	896088	897070	898048	899020	899987	900949	901905	902857	903809	904786					
225	896104	897087	898064	899036	900003	900965	901921	902872	903825	904802					
240	896121	897103	898080	899052	900019	900981	901937	902888	903839	904818					
255	896137	897119	898097	899068	900035	900997	901953	902904	903850	904834					
270	896154	897136	898113	899085	900051	901013	901969	902920	903866	904850					
285	896170	897152	898129	899101	900067	901028	901985	902935	903881	904866					
300	896186	897168	898145	899117	900083	901044	902001	902951	903897	904882					
315	896203	897185	898161	899133	900099	901060	902016	902967	903913	904898					
330	896219	897201	898178	899149	900115	901076	902032	902983	903929	904914					
345	896236	897217	898194	899165	900131	901092	902048	902999	903944	904930					
360	896252	897234	898210	899182	900148	901108	902064	903015	903960	904946					
375	896268	897250	898226	899198	900164	901124	902080	903030	903976	904962					
390	896285	897266	898243	899214	900180	901140	902096	903046	903991	904978					
405	896301	897283	898259	899230	900196	901156	902112	903062	904007	904994					
420	896318	897299	898275	899246	900212	901172	902128	903078	904023	905010					
435	896334	897316	898291	899262	900228	901188	902144	903094	904038	905026					
450	896350	897332	898308	899278	900244	901204	902159	903109	904054	905042					
465	896367	897348	898324	899294	900260	901220	902175	903125	904070	905058					
480	896383	897364	898340	899310	900276	901236	902191	903141	904086	905074					
495	896400	897380	898356	899327	900292	901252	902207	903157	904101	905090					
510	896416	897397	898372	899343	900309	901268	902223	903172	904117	905106					
525	896432	897413	898389	899359	900324	901284	902239	903188	904133	905122					
540	896449	897429	898404	899375	900340	901300	902255	903204	904148	905138					
555	896465	897446	898421	899391	900356	901316	902270	903220	904164	905154					
570	896482	897462	898437	899407	900372	901332	902286	903236	904180	905170					
585	896498	897477	898453	899423	900388	901348	902302	903251	904195	905186					
600	896514	897493	898469	899439	900404	901364	902318	903267	904211	905202					
615	896531	897511	898486	899456	900420	901380	902334	903283	904227	905218					
630	896547	897527	898502	899472	900436	901396	902350	903299	904242	905234					
645	896563	897543	898518	899488	900452	901412	902366	903314	904258	905250					
660	896580	897560	898535	899504	900468	901428	902382	903330	904274	905266					
675	896596	897576	898551	899520	900484	901443	902398	903346	904289	905282					
690	896613	897592	898567	899536	900500	901459	902413	903362	904305	905298					
705	896629	897609	898583	899552	900516	901475	902429	903378	904321	905314					
720	896645	897625	898599	899569	900532	901491	902445	903393	904337	905330					
735	896662	897641	898615	899585	900548	901507	902461	903409	904352	905346					
750	896678	897658	898632	899601	900565	901523	902477	903425	904368	905362					
765	896694	897674	898648	899617	900581	901539	902492	903441	904384	905378					
780	896711	897690	898664	899633	900597	901555	902508	903456	904399	905394					
795	896727	897706	898680	899649	900613	901571	902524	903472	904415	905410					
810	896744	897723	898697	899665	900629	901587	902540	903488	904431	905426					
825	896760	897739	898713	899681	900645	901603	902556	903504	904446	905442					
840	896776	897755	898729	899697	900661	901619	902572	903519	904462	905458					
855	896793	897771	898745	899713	900677	901635	902587	903535	904478	905474					
870	896809	897788	898761	899730	900693	901651	902603	903551	904493	905490					
885	896825	897804	898777	899746	900709	901666	902619	903567	904509	905506					
900	896842	897820	898794	899762	900725	901682	902635	903582	904525	905522					
915	896858	897836	898810	899778	900741	901698	902651	903598	904545	905538					
930	896874	897853	898826	899794	900757	901714	902667	903614	904561	905554					
945	896891	897869	898842	899810	900773	901730	902682	903630	904577	905570					
960	896907	897885	898858	899826	900789	901746	902698	903645	904592	905586					
975	896923	897901	898874	899842	900805	901762	902714	903661	904608	905602					
990	896939	897918	898891	899859	900821	901778	902730	903677	904624	905618					
1005	896956	897934	898907	899874	900837	901794	902746	903693	904641	905634					
1020	896972	897950	898923	899890	900853	901810	902762	903714	904668	905650					
1035	896989	897967	898939	899906	900869	901826	902778	903730	904695	905666					
1050	897005	897983	898955	899923	900885	901842	902793	903745	904722	905682					
1065	897021	897999	898971	899939	900901	901857	902809	903761	904738	905698					
1080	897038	898015	898988	899955	900917	901873	902825	903777	904754	905714					
1095	897054	898032	899004	899971	900933	901889	902841	903793	904770	905730					
1110	897070	898048	899020	899987	900949	901905	902857	903809	904786	905746					
1125	897087	898064	899036	900003	900965	901921	902872	903825	904802	905762					
1140	897103	898080	899052	900019	900981	901937	902888	903839	904818	905778					
1155	897119	898097	899068	900035	900997	901953	902904	903850	904834	905794					
1170	897136	898113	899085	900051	901013	901969	902920	903866	904850	905810					
1185	897152	898129	899101	900067	901028	901985	902935	903881	904866	905826					
1200	897168	898145	899117	900083	901044	902001	902951	903897	904882	905842					
1215	897185	898161	899133	900099	901060	902016	902967	903913	904898	905858					
1230	897201	898178	899149	900115	901076	902032	902983	903929	904914	905874					
1245	897217	898194	899165	900131	901092	902048	902999	903944	904930	905890					
1260	897234	898210	899182	900148	901108	902064	903015	903960	904946	905906					
1275	897250	898226	899198	900164	901124	902080	903030	903976	904962	905922					
1290	897266	898243	899214	900180	901140	902096	903046	903991	904978	905938					
1305	897283	898259	899230	900196	901156	902112	903062	904007	904994	905954					
1320	897299	898275	899246	900212	901172	902128	903078	904023	905010	905970					
1335	897316	898291	899262	900228	901188	902144	903094	904038	905026	905986					
1350	897332	898308	899278	900244	901204	902159	903109	904054	905042	905992					
1365	897348	898324	899294	900260	901220	902175	903125	904070	905058	906008					
1380	897364	898340	899310	900276	901236	902191	903141	904086	905074	906024					
1395	897380	898356	899327	900292	901252	902207	903157	904101	905090	906040					
1410	897397	898372	899343	900309	901268	902223	903172	904117	905106	906056					
1425	897413	898389	899359	900324	901284	902239	903188	904133	905122	906072					
1440	897429	898404	899375	900340	901300	902255	903204	904148	905138	906088					
1455	897446	898421	899391	900356	901316	902270	903220	904164	905154	906104					
1470	897462	898437	899407	900372	901332	902286	903236	904180	905170	906120					
1485	897477	898453	899423	900388	901348	902302	903251	904195	905186	906136					
1500	89														

30"	31"	32"	33"	34"	35"	36"	37"	38"	39"
127 deg.	128 deg.					129 deg.			
9.903462	9.906394	9.907320	9.908242	9.909159	9.910070	9.910976	9.911878	9.912774	9.913665
9.903477	9.906409	9.907336	9.908257	9.909174	9.910085	9.910992	9.911893	9.912789	9.913680
9.903493	9.906425	9.907351	9.908273	9.909189	9.910100	9.911007	9.911908	9.912804	9.913695
9.903508	9.906440	9.907367	9.908288	9.909204	9.910116	9.911022	9.911923	9.912819	9.913710
9.903524	9.906456	9.907382	9.908303	9.909220	9.910131	9.911037	9.911938	9.912834	9.913725
9.903539	9.906471	9.907397	9.908319	9.909235	9.910146	9.911052	9.911953	9.912849	9.913735
9.903555	9.906486	9.907413	9.908334	9.909250	9.910161	9.911067	9.911968	9.912863	9.913745
9.903571	9.906502	9.907428	9.908349	9.909265	9.910176	9.911082	9.911983	9.912878	9.913759
9.903586	9.906517	9.907444	9.908365	9.909280	9.910191	9.911097	9.911998	9.912893	9.913774
9.903602	9.906533	9.907459	9.908380	9.909296	9.910206	9.911112	9.912013	9.912908	9.913789
9.903617	9.906548	9.907474	9.908395	9.909311	9.910222	9.911127	9.912028	9.912923	9.913804
9.903633	9.906564	9.907490	9.908410	9.909326	9.910237	9.911142	9.912043	9.912938	9.913819
9.903648	9.906579	9.907505	9.908426	9.909341	9.910252	9.911157	9.912058	9.912953	9.913834
9.903664	9.906595	9.907520	9.908441	9.909357	9.910267	9.911172	9.912072	9.912968	9.913849
9.903680	9.906610	9.907536	9.908456	9.909372	9.910282	9.911187	9.912087	9.912983	9.913864
9.903695	9.906626	9.907551	9.908472	9.909387	9.910297	9.911202	9.912102	9.912997	9.913879
9.903711	9.906641	9.907567	9.908487	9.909402	9.910312	9.911217	9.912117	9.913012	9.913894
9.903726	9.906657	9.907582	9.908502	9.909417	9.910327	9.911232	9.912132	9.913027	9.913909
9.903742	9.906672	9.907597	9.908518	9.909433	9.910343	9.911247	9.912147	9.913042	9.913924
9.903757	9.906688	9.907613	9.908533	9.909448	9.910358	9.911262	9.912162	9.913057	9.913939
9.903773	9.906703	9.907628	9.908548	9.909463	9.910373	9.911277	9.912177	9.913072	9.913954
9.903788	9.906719	9.907644	9.908563	9.909478	9.910388	9.911293	9.912192	9.913087	9.913969
9.903804	9.906734	9.907659	9.908579	9.909493	9.910403	9.911308	9.912207	9.913101	9.913984
9.903819	9.906749	9.907674	9.908594	9.909509	9.910418	9.911323	9.912222	9.913116	9.914000
9.903835	9.906765	9.907690	9.908609	9.909524	9.910433	9.911338	9.912237	9.913131	9.914015
9.903851	9.906780	9.907705	9.908625	9.909539	9.910448	9.911353	9.912252	9.913146	9.914030
9.903866	9.906796	9.907720	9.908640	9.909554	9.910463	9.911368	9.912267	9.913161	9.914045
9.903882	9.906811	9.907736	9.908655	9.909569	9.910479	9.911383	9.912282	9.913176	9.914060
9.903897	9.906827	9.907751	9.908670	9.909585	9.910494	9.911398	9.912297	9.913191	9.914075
9.903913	9.906842	9.907766	9.908686	9.909600	9.910509	9.911413	9.912312	9.913206	9.914090
9.903928	9.906858	9.907782	9.908701	9.909615	9.910524	9.911428	9.912327	9.913220	9.914105
9.903944	9.906873	9.907797	9.908716	9.909630	9.910539	9.911443	9.912342	9.913235	9.914120
9.903959	9.906889	9.907813	9.908732	9.909645	9.910554	9.911458	9.912357	9.913250	9.914135
9.903975	9.906904	9.907828	9.908747	9.909661	9.910569	9.911473	9.912371	9.913265	9.914150
9.903990	9.906919	9.907843	9.908762	9.909676	9.910584	9.911488	9.912386	9.913280	9.914165
9.904006	9.906935	9.907859	9.908777	9.909691	9.910599	9.911503	9.912401	9.913295	9.914180
9.904021	9.906950	9.907874	9.908793	9.909706	9.910615	9.911518	9.912416	9.913309	9.914195
9.904037	9.906966	9.907889	9.908808	9.909721	9.910630	9.911533	9.912431	9.913324	9.914210
9.904052	9.906981	9.907905	9.908823	9.909736	9.910645	9.911548	9.912446	9.913339	9.914225
9.904068	9.906997	9.907920	9.908838	9.909752	9.910660	9.911563	9.912461	9.913354	9.914240
9.904083	9.907012	9.907935	9.908854	9.909767	9.910675	9.911578	9.912476	9.913369	9.914255
9.904099	9.907027	9.907951	9.908869	9.909782	9.910690	9.911593	9.912491	9.913384	9.914270
9.904115	9.907043	9.907966	9.908884	9.909797	9.910705	9.911608	9.912506	9.913399	9.914285
9.904130	9.907058	9.907981	9.908899	9.909812	9.910720	9.911623	9.912521	9.913413	9.914301
9.904146	9.907074	9.907997	9.908915	9.909828	9.910735	9.911638	9.912536	9.913428	9.914316
9.904161	9.907089	9.908012	9.908930	9.909843	9.910750	9.911653	9.912550	9.913443	9.914331
9.904177	9.907105	9.908027	9.908945	9.909858	9.910765	9.911668	9.912565	9.913458	9.914346
9.904192	9.907120	9.908043	9.908960	9.909873	9.910781	9.911683	9.912580	9.913473	9.914360
9.904208	9.907135	9.908058	9.908976	9.909888	9.910796	9.911698	9.912595	9.913487	9.914375
9.904223	9.907151	9.908073	9.908991	9.909903	9.910811	9.911713	9.912610	9.913502	9.914390
9.904239	9.907166	9.908089	9.909006	9.909919	9.910826	9.911728	9.912625	9.913517	9.914404
9.904254	9.907182	9.908104	9.909021	9.909934	9.910841	9.911743	9.912640	9.913531	9.914419
9.904270	9.907197	9.908119	9.909037	9.909949	9.910856	9.911758	9.912655	9.913547	9.914434
9.904285	9.907212	9.908135	9.909052	9.909964	9.910871	9.911773	9.912670	9.913562	9.914448
9.904301	9.907228	9.908150	9.909067	9.909979	9.910886	9.911788	9.912685	9.913576	9.914463
9.904316	9.907243	9.908165	9.909082	9.909994	9.910901	9.911803	9.912700	9.913591	9.914478
9.904332	9.907259	9.908181	9.909098	9.910009	9.910916	9.911818	9.912714	9.913606	9.914493
9.904347	9.907274	9.908196	9.909113	9.910023	9.910931	9.911833	9.912729	9.913621	9.914507
9.904363	9.907290	9.908211	9.909128	9.910040	9.910946	9.911848	9.912744	9.913636	9.914522
9.904378	9.907305	9.908227	9.909143	9.910055	9.910961	9.911863	9.912759	9.913650	9.914537
9.904394	9.907320	9.908242	9.909159	9.910070	9.910976	9.911878	9.912774	9.913665	9.914551

	40"	41"	42"	43"	44"	45"	46"	47"	48"
	130 deg.				131 deg.			132 d.	
0	9.91435	9.91433	9.91630	9.91718	9.91804	9.91890	9.91976	9.92061	9.92146
15	91436	91447	91632	91719	91806	91892	91978	92062	92147
30	91451	91546	91638	91730	91807	91893	91979	92064	92148
45	91456	91547	91635	91723	91808	91895	91980	92065	92150
1	9.91461	9.91549	9.91636	9.91723	9.91810	9.91896	9.91982	9.92067	9.92151
15	91462	91556	91638	91725	91811	91897	91983	92068	92153
30	91464	91552	91639	91727	91812	91898	91984	92069	92154
45	91465	9 5535	91641	91728	91814	91900	91985	92071	92159
1	9.91469	9.91550	9.91635	9.91729	9.91816	9.91902	9.91987	9.92072	9.92157
15	91468	91554	91640	91731	91817	91903	91989	92074	92158
30	91469	91557	91643	91732	91819	91905	91990	92075	92160
45	91471	91559	91646	91733	91820	91906	91991	92077	92161
1	9.91472	9.91560	9.91648	9.91735	9.91821	9.91907	9.91993	9.92078	9.92162
15	91473	91562	91649	91736	91823	91909	91994	92079	92163
30	91475	91563	91651	91738	91824	91910	91996	92081	92165
45	91477	91562	91652	91739	91826	91912	91997	92082	92167
1	9.91478	9.91567	9.91654	9.91741	9.91827	9.91913	9.91999	9.92084	9.92168
15	91480	91568	91655	91742	91829	91915	92000	92085	92169
30	91481	91569	91657	91744	91830	91916	92001	92086	92171
45	91483	91570	91658	91745	91831	91917	92003	92088	92172
1	9.91484	9.91572	9.91660	9.91746	9.91833	9.91919	9.92004	9.92089	9.92174
15	91486	91574	91661	91748	91834	91920	92006	92091	92175
30	91487	91575	91662	91749	91836	91921	92007	92092	92176
45	91488	91576	91663	91751	91837	91923	92009	92093	92178
1	9.91490	9.91578	9.91666	9.91752	9.91839	9.91925	9.92010	9.92095	9.92179
15	91491	91579	91667	91754	91840	91926	92011	92096	92181
30	91493	91581	91668	91756	91842	91927	92013	92098	92182
45	91494	91582	91670	91757	91843	91929	92014	92099	92183
1	9.91496	9.91584	9.91671	9.91758	9.91846	9.91930	9.92016	9.92101	9.92185
15	91497	91585	91673	91759	91847	91932	92017	92102	92186
30	91499	91587	91674	91761	91847	91933	92018	92103	92187
45	91500	91588	91675	91762	91849	91935	92020	92105	92188
1	9.91502	9.91590	9.91677	9.91764	9.91850	9.91936	9.92021	9.92106	9.92190
15	91503	91591	91678	91765	91852	91937	92022	92108	92192
30	91505	91593	91680	91767	91853	91939	92024	92109	92193
45	91506	91594	91681	91768	91854	91940	92026	92110	92195
1	9.91508	9.91595	9.91683	9.91770	9.91856	9.91942	9.92027	9.92112	9.92196
15	91509	91597	91684	91771	91857	91943	92028	92113	92198
30	91511	91598	91685	91772	91859	91945	92030	92115	92199
45	91512	91600	91686	91773	91860	91946	92031	92116	92200
1	9.91513	9.91601	9.91689	9.91775	9.91862	9.91947	9.92033	9.92117	9.92202
15	91514	91602	91690	91777	91863	91949	92034	92119	92203
30	91516	91604	91691	91778	91864	91950	92035	92120	92205
45	91518	91606	91693	91780	91866	91952	92037	92122	92206
1	9.91519	9.91607	9.91694	9.91781	9.91867	9.91953	9.92038	9.92123	9.92207
15	91521	91609	91696	91783	91869	91954	92040	92124	92209
30	91522	91610	91697	91784	91870	91956	92041	92125	92210
45	91524	91611	91699	91785	91872	91957	92043	92127	92211
1	9.91525	9.91613	9.91700	9.91787	9.91873	9.91959	9.92044	9.92129	9.92213
15	91527	91614	91702	91788	91874	91960	92045	92130	92214
30	91528	91615	91703	91790	91876	91962	92047	92132	92216
45	91530	91617	91705	91791	91877	91963	92048	92133	92217
1	9.91531	9.91619	9.91706	9.91793	9.91879	9.91964	9.92050	9.92134	9.92219
15	91533	91620	91707	91794	91880	91965	92051	92136	92220
30	91534	91621	91709	91795	91882	91967	92052	92137	92221
45	91535	91623	91710	91797	91883	91969	92053	92139	92222
1	9.91537	9.91625	9.91712	9.91798	9.91885	9.91970	9.92055	9.92140	9.92224
15	91538	91625	91713	91800	91886	91972	92057	92141	92226
30	91540	91626	91715	91801	91887	91973	92058	92142	92227
45	91541	91629	91716	91803	91889	91974	92060	92144	92228
1	9.91543	9.91630	9.91718	9.91804	9.91890	9.91976	9.92061	9.92146	9.92230
15	91544	91631	91719	91806	91892	91978	92062	92147	92231
30	91545	91632	91720	91807	91893	91979	92063	92148	92232
45	91546	91633	91721	91808	91894	91980	92064	92149	92233
1	9.91547	9.91634	9.91722	9.91809	9.91895	9.91981	9.92065	9.92150	9.92234
15	91548	91635	91723	91810	91896	91982	92066	92151	92235
30	91549	91636	91724	91811	91897	91983	92067	92152	92236
45	91550	91637	91725	91812	91898	91984	92068	92153	92237
1	9.91551	9.91638	9.91726	9.91813	9.91899	9.91985	9.92069	9.92154	9.92238
15	91552	91639	91727	91814	91900	91986	92070	92155	92239
30	91553	91640	91728	91815	91901	91987	92071	92156	92240
45	91554	91641	91729	91816	91902	91988	92072	92157	92241
1	9.91555	9.91642	9.91730	9.91817	9.91903	9.91989	9.92073	9.92158	9.92242
15	91556	91643	91731	91818	91904	91990	92074	92159	92243
30	91557	91644	91732	91819	91905	91991	92075	92160	92244
45	91558	91645	91733	91820	91906	91992	92076	92161	92245
1	9.91559	9.91646	9.91734	9.91821	9.91907	9.91993	9.92077	9.92162	9.92246
15	91560	91647	91735	91822	91908	91994	92078	92163	92247
30	91561	91648	91736	91823	91909	91995	92079	92164	92248
45	91562	91649	91737	91824	91910	91996	92080	92165	92249
1	9.91563	9.91650	9.91738	9.91825	9.91911	9.91997	9.92081	9.92166	9.92250
15	91564	91651	91739	91826	91912	91998	92082	92167	92251
30	91565	91652	91740	91827	91913	91999	92083	92168	92252
45	91566	91653	91741	91828	91914	92000	92084	92169	92253
1	9.91567	9.91654	9.91742	9.91829	9.91915	9.91999	9.92085	9.92170	9.92254
15	91568	91655	91743	91830	91916	92001	92086	92171	92255
30	91569	91656	91744	91831	91917	92002	92087	92172	92256
45	91570	91657	91745	91832	91918	92003	92088	92173	92257
1	9.91571	9.91658	9.91746	9.91833	9.91919	9.91999	9.92089	9.92174	9.92258
15	91572	91658	91746	91834	91920	92004	92090	92175	92259
30	91573	91659	91747	91835	91921	92005	92091	92176	92260
45	91574	91660	91748	91836	91922	92006	92092	92177	92261
1	9.91575	9.91661	9.91749	9.91837	9.91923	9.91999	9.92093	9.92178	9.92262
15	91576	91662	91749	91838	91924	92007	92094	92179	92263
30	91577	91663	91750	91839	91925	92008	92095	92180	92264
45	91578	91664	91751	91840	91926	92009	92096	92181	92265
1	9.91579	9.91665	9.91752	9.91841	9.91927	9.91999	9.92097	9.92182	9.92266
15	91580	91666	91753	91842	91928	92010	92098	92183	92267
30	91581	91667	91754	91843	91929	92011	92099	92184	92268
45	91582	91668	91755	91844	91930	92012	92100	92185	92269
1	9.91583	9.91669	9.91756	9.91845	9.91931	9.91999	9.92101	9.92186	9.92270
15	91584	91669	91756	91846	91932	92013	92102	92187	92271
30	91585	91670	91757	91847	91933	92014	92103	92188	92272
45	91586	91671	91758	91848	91934	92015	92104	92189	92273
1	9.91587	9.91672	9.91759	9.91849	9.91935	9.91999	9.92105	9.92190	9.92274
15	91588	91672	91759	91850	91936	92016	92106	92191	92275
30	91589	91673	91760	91851	91937	92017	92107	92192	92276
45	91590	91674	91761	91852	91938	92018	92108	92193	92277
1	9.91591	9.91675	9.91762	9.91853	9.91939	9.91999	9.92109	9.92194	9.92278
15	91592	91675	91762	91854	91940	92019	92109	92195	92279
30	91593	91676	91763	91855	91941	92020	92110	92196	92280
45	91594	91677	91764	91856	91942	92021	92111	92197	92281
1	9.91595	9.91678	9.91765	9.91857	9.91943	9.91999			

8 Hours

Log. Haverline. (1)

8 Hours

	50"	51"	52"	53"	54"	55"	56"	57"	58"	59"
	132 deg.			133 deg.			134 deg.			
0	9.923136	9.923969	9.924796	9.925617	9.926434	9.927245	9.928052	9.928854	9.929651	9.930443
1	9.923162	9.923997	9.924823	9.925644	9.926461	9.927272	9.928079	9.928881	9.929678	9.930470
2	9.923189	9.924011	9.924837	9.925658	9.926474	9.927286	9.928092	9.928894	9.929691	9.930483
3	9.923215	9.924038	9.924864	9.925685	9.926501	9.927313	9.928119	9.928921	9.929717	9.930509
4	9.923241	9.924064	9.924890	9.925711	9.926527	9.927339	9.928145	9.928947	9.929744	9.930535
5	9.923267	9.924090	9.924916	9.925737	9.926553	9.927365	9.928171	9.928973	9.929770	9.930562
6	9.923293	9.924116	9.924942	9.925763	9.926579	9.927391	9.928197	9.928999	9.929796	9.930588
7	9.923319	9.924142	9.924968	9.925789	9.926605	9.927417	9.928223	9.929025	9.929822	9.930614
8	9.923345	9.924168	9.924994	9.925815	9.926631	9.927443	9.928249	9.929051	9.929848	9.930640
9	9.923371	9.924194	9.925020	9.925841	9.926657	9.927469	9.928275	9.929077	9.929874	9.930666
10	9.923397	9.924220	9.925046	9.925867	9.926683	9.927495	9.928301	9.929103	9.929900	9.930692
11	9.923423	9.924246	9.925072	9.925893	9.926709	9.927521	9.928327	9.929129	9.929926	9.930718
12	9.923449	9.924272	9.925098	9.925919	9.926735	9.927547	9.928353	9.929155	9.929952	9.930744
13	9.923475	9.924298	9.925124	9.925945	9.926761	9.927573	9.928379	9.929181	9.929978	9.930770
14	9.923501	9.924324	9.925150	9.925971	9.926787	9.927599	9.928405	9.929207	9.929994	9.930796
15	9.923527	9.924350	9.925176	9.925997	9.926813	9.927625	9.928431	9.929233	9.929920	9.930822
16	9.923553	9.924376	9.925202	9.926023	9.926839	9.927651	9.928457	9.929259	9.929946	9.930848
17	9.923579	9.924402	9.925228	9.926049	9.926865	9.927677	9.928483	9.929285	9.929972	9.930874
18	9.923605	9.924428	9.925254	9.926075	9.926891	9.927703	9.928509	9.929311	9.929998	9.930900
19	9.923631	9.924454	9.925280	9.926101	9.926917	9.927729	9.928535	9.929337	9.929924	9.930926
20	9.923657	9.924480	9.925306	9.926127	9.926943	9.927755	9.928561	9.929363	9.929950	9.930952
21	9.923683	9.924506	9.925332	9.926153	9.926969	9.927781	9.928587	9.929389	9.929976	9.930978
22	9.923709	9.924532	9.925358	9.926179	9.926995	9.927807	9.928613	9.929415	9.929992	9.931004
23	9.923735	9.924558	9.925384	9.926205	9.927021	9.927833	9.928639	9.929441	9.929918	9.931030
24	9.923761	9.924584	9.925410	9.926231	9.927047	9.927859	9.928665	9.929467	9.929944	9.931056
25	9.923787	9.924610	9.925436	9.926257	9.927073	9.927885	9.928691	9.929493	9.929970	9.931082
26	9.923813	9.924636	9.925462	9.926283	9.927100	9.927912	9.928718	9.929520	9.929997	9.931108
27	9.923839	9.924662	9.925488	9.926309	9.927126	9.927938	9.928744	9.929546	9.929923	9.931134
28	9.923865	9.924688	9.925514	9.926335	9.927152	9.927964	9.928770	9.929572	9.929949	9.931160
29	9.923891	9.924714	9.925540	9.926361	9.927178	9.927990	9.928796	9.929602	9.929979	9.931186
30	9.923917	9.924740	9.925566	9.926387	9.927204	9.928016	9.928822	9.929628	9.929995	9.931212
31	9.923943	9.924766	9.925592	9.926413	9.927230	9.928042	9.928848	9.929654	9.929921	9.931238
32	9.923969	9.924792	9.925618	9.926439	9.927256	9.928068	9.928874	9.929680	9.929947	9.931264
33	9.923995	9.924818	9.925644	9.926465	9.927282	9.928094	9.928900	9.929706	9.929973	9.931290
34	9.924021	9.924844	9.925670	9.926491	9.927308	9.928120	9.928926	9.929732	9.929999	9.931316
35	9.924047	9.924870	9.925696	9.926517	9.927334	9.928146	9.928952	9.929758	9.929925	9.931342
36	9.924073	9.924896	9.925722	9.926543	9.927360	9.928172	9.928978	9.929784	9.929951	9.931368
37	9.924099	9.924922	9.925748	9.926569	9.927386	9.928200	9.929006	9.929812	9.929979	9.931394
38	9.924125	9.924948	9.925774	9.926595	9.927412	9.928226	9.929032	9.929838	9.929995	9.931420
39	9.924151	9.924974	9.925800	9.926621	9.927438	9.928252	9.929058	9.929864	9.929921	9.931446
40	9.924177	9.924999	9.925826	9.926647	9.927464	9.928278	9.929084	9.929890	9.929947	9.931472
41	9.924203	9.925025	9.925852	9.926673	9.927490	9.928304	9.929110	9.929916	9.929973	9.931498
42	9.924229	9.925051	9.925878	9.926699	9.927516	9.928330	9.929136	9.929942	9.929999	9.931524
43	9.924255	9.925077	9.925904	9.926725	9.927542	9.928356	9.929162	9.929968	9.929925	9.931550
44	9.924281	9.925103	9.925930	9.926751	9.927568	9.928382	9.929188	9.929994	9.929951	9.931576
45	9.924307	9.925129	9.925956	9.926777	9.927594	9.928408	9.929214	9.929920	9.929977	9.931602
46	9.924333	9.925155	9.925982	9.926803	9.927620	9.928434	9.929240	9.929966	9.929923	9.931628
47	9.924359	9.925181	9.926008	9.926829	9.927646	9.928460	9.929266	9.929992	9.929949	9.931654
48	9.924385	9.925207	9.926034	9.926855	9.927672	9.928486	9.929292	9.929918	9.929975	9.931680
49	9.924411	9.925233	9.926060	9.926881	9.927698	9.928512	9.929318	9.929944	9.929901	9.931706
50	9.924437	9.925259	9.926086	9.926907	9.927724	9.928538	9.929344	9.929970	9.929927	9.931732
51	9.924463	9.925285	9.926112	9.926933	9.927750	9.928564	9.929370	9.929996	9.929953	9.931758
52	9.924489	9.925311	9.926138	9.926959	9.927776	9.928590	9.929396	9.929922	9.929979	9.931784
53	9.924515	9.925337	9.926164	9.926985	9.927802	9.928616	9.929422	9.929948	9.929905	9.931810
54	9.924541	9.925363	9.926190	9.927011	9.927828	9.928642	9.929448	9.929974	9.929931	9.931836
55	9.924567	9.925389	9.926216	9.927037	9.927854	9.928668	9.929474	9.929990	9.929947	9.931862
56	9.924593	9.925415	9.926242	9.927063	9.927880	9.928694	9.929500	9.929916	9.929973	9.931888
57	9.924619	9.925441	9.926268	9.927089	9.927906	9.928720	9.929526	9.929952	9.929909	9.931914
58	9.924645	9.925467	9.926294	9.927115	9.927932	9.928746	9.929552	9.929978	9.929935	9.931940
59	9.924671	9.925493	9.926320	9.927141	9.927958	9.928772	9.929578	9.929994	9.929951	9.931966
60	9.924697	9.925519	9.926346	9.927167	9.927984	9.928798	9.929604	9.929920	9.929977	9.931992
61	9.924723	9.925545	9.926372	9.927193	9.928010	9.928824	9.929630	9.929946	9.929903	9.932018
62	9.924749	9.925571	9.926398	9.927219	9.928036	9.928850	9.929656	9.929972	9.929929	9.932044
63	9.924775	9.925597	9.926424	9.927245	9.928062	9.928876	9.929682	9.929998	9.929955	9.932070
64	9.924801	9.925623	9.926450	9.927271	9.928088	9.928902	9.929708	9.929924	9.929981	9.932096
65	9.924827	9.925649	9.926476	9.927297	9.928114	9.928928	9.929734	9.929950	9.929907	9.932122
66	9.924853	9.925675	9.926502	9.927323	9.928140	9.928954	9.929760	9.929976	9.929933	9.932148
67	9.924879	9.925701	9.926528	9.927349	9.928166	9.928980	9.929786	9.929992	9.929959	9.932174
68	9.924905	9.925727	9.926554	9.927375	9.928192	9.929006	9.929812	9.929918	9.929975	9.932200
69	9.924931	9.925753	9.926580	9.927401	9.928218	9.929032	9.929838	9.929954	9.929911	9.932226
70	9.924957	9.925779	9.926606	9.927427	9.928244	9.929058	9.929864	9.929980	9.929937	9.932252
71	9.924983	9.925805	9.926632	9.927453	9.928270	9.929084	9.929890	9.929996	9.929953	9.932278
72	9.925009	9.925831	9.926658	9.927479	9.928296	9.929110	9.929916	9.929922	9.929979	9.932304
73	9.925035	9.925857	9.926684	9.927505	9.928322	9.929136	9.929942	9.929948	9.929905	9.932330
74	9.925061	9.925883	9.926710	9.927531	9.928348	9.929162	9.929968	9.929924	9.929981	9.932356
75	9.925087	9.925909	9.926736	9.927557	9.928374	9.929188	9.929994	9.929950	9.929907	9.932382
76	9.925113	9.925935	9.926762	9.927583	9.928400	9.929214	9.929920	9.929976	9.929933	9.932408
77	9.925139	9.925961	9.926788	9.927609	9.928426	9.929240	9.929946	9.929952	9.929909	9.932434
78	9.925165	9.925987	9.926814	9.927635	9.928452	9.929266	9.929972	9.929928	9.929985	9.932460
79	9.925191	9.926013	9.926840	9.927661	9.928478	9.929292	9.929998	9.929954	9.929911	9.932486
80	9.925217	9.926039	9.926866	9.927687	9.928504	9.929318	9.929924	9.929980	9.929937	9.932512
81	9.925243	9.926065	9.926892	9.927713	9.928530	9.929344	9.929950	9.929956	9.929913	9.932538
82	9.925269	9.926091	9.926918	9.927739	9.928556	9.929370	9.929976	9.929982	9.929939	9.932564
83	9.925295	9.926117	9.926944	9.927765	9.928582	9.929396	9.929992	9.929958	9.929915	9.932590
84	9.925321	9.926143								

Log. Havensines. (t)

Time.	h	m	s	9 ^h 0 ^m	9 ^h 4 ^m	9 ^h 8 ^m	9 ^h 12 ^m	9 ^h 16 ^m	9 ^h 20 ^m	9 ^h 24 ^m	9 ^h 28 ^m	9 ^h 32 ^m	Time.
				135°	136°	137°	138°	139°	140°	141°	142°	143°	
0	0	0	0	9.931231	9.931332	9.931356	9.940303	9.9413175	9.945972	9.948693	9.951340	9.953913	60 0
0	4	1	0	931283	931383	931406	940352	943223	946018	948738	951384	953955	59 56
0	8	2	0	931335	931434	931455	940400	943270	946064	948783	951427	953998	59 52
0	12	3	0	931388	931485	931505	940449	943317	946109	948827	951471	954040	59 48
0	16	4	0	9.931440	9.931536	9.931555	9.940497	9.941364	9.946155	9.948872	9.951514	9.954082	59 44
0	20	5	0	931492	931587	931604	940546	943411	946201	948917	951557	954124	59 40
0	24	6	0	931544	931638	931654	940594	943458	946247	948961	951601	954166	59 36
0	28	7	0	931596	931688	931704	940642	943505	946293	949006	951644	954209	59 32
0	32	8	0	9.931649	9.931739	9.931753	9.940691	9.941552	9.946339	9.949050	9.951687	9.954251	59 28
0	36	9	0	931701	931790	931803	940739	943600	946385	949095	951731	954293	59 24
0	40	10	0	931753	931841	931852	940787	943647	946430	949139	951774	954335	59 20
0	44	11	0	931805	931892	931902	940836	943694	946476	949184	951817	954377	59 16
0	48	12	0	9.931857	9.931943	9.931951	9.940884	9.941741	9.946522	9.949228	9.951861	9.954419	59 12
0	52	13	0	931909	931993	932001	940932	943788	946568	949273	951904	954461	59 8
0	56	14	0	931961	932044	932050	940980	943834	946613	949317	951947	954503	59 4
1	0	15	0	932013	932095	932100	941029	943881	946659	949362	951990	954545	58 0
1	4	16	0	9.932065	9.932146	9.932150	9.941077	9.941928	9.946705	9.949406	9.952033	9.954587	58 1
1	8	17	0	932117	932196	932209	941125	943975	946750	949451	952077	954629	58 1
1	12	18	0	932169	932247	932248	941173	944022	946796	949495	952120	954671	58 1
1	16	19	0	932221	932298	932297	941221	944069	946842	949539	952163	954713	58 1
1	20	20	0	9.932273	9.932348	9.932347	9.941269	9.942116	9.946887	9.949584	9.952206	9.954754	58 1
1	24	21	0	932325	932399	932396	941317	944163	946933	949628	952249	954796	58 1
1	28	22	0	932377	932449	932445	941365	944209	946978	949672	952292	954838	58 1
1	32	23	0	932429	932500	932495	941413	944256	947024	949717	952335	954880	58 1
1	36	24	0	9.932480	9.932551	9.932544	9.941461	9.942303	9.947069	9.949761	9.952378	9.954922	58 1
1	40	25	0	932532	932601	932593	941509	944350	947115	949805	952421	954964	58 1
1	44	26	0	932584	932652	932642	941557	944396	947160	949849	952464	955005	58 1
1	48	27	0	932636	932702	932692	941605	944443	947206	949893	952507	955047	58 1
1	52	28	0	9.932687	9.932753	9.932741	9.941653	9.942490	9.947251	9.949938	9.952550	9.955089	58 1
1	56	29	0	932739	932803	932790	941701	944536	947296	949982	952593	955130	58 1
2	0	30	0	932791	932853	932839	941749	944583	947342	950026	952636	955172	58 1
2	4	31	0	932843	932904	932888	941797	944629	947387	950070	952679	955214	58 1
2	8	32	0	9.932894	9.932954	9.932937	9.941845	9.942676	9.947432	9.950114	9.952722	9.955255	58 1
2	12	33	0	932946	933004	932986	941892	944723	947478	950158	952764	955297	58 1
2	16	34	0	932997	933055	933035	941940	944769	947523	950202	952807	955339	58 1
2	20	35	0	933049	933105	933085	941988	944816	947568	950246	952850	955380	58 1
2	24	36	0	9.933101	9.933155	9.933134	9.942036	9.942862	9.947613	9.950290	9.952893	9.955422	58 1
2	28	37	0	933152	933206	933183	942083	944909	947659	950334	952936	955463	58 1
2	32	38	0	933204	933256	933232	942131	944955	947704	950378	952978	955504	58 1
2	36	39	0	933255	933306	933280	942179	945001	947749	950422	953021	955546	58 1
2	40	40	0	9.933307	9.933356	9.933329	9.942226	9.943048	9.947794	9.950466	9.953064	9.955588	58 1
2	44	41	0	933358	933406	933378	942274	945094	947839	950510	953106	955629	58 1
2	48	42	0	933410	933457	933427	942322	945141	947884	950554	953149	955671	58 1
2	52	43	0	933461	933507	933476	942369	945187	947930	950598	953192	955712	58 1
2	56	44	0	9.933512	9.933557	9.933525	9.942417	9.943233	9.947975	9.950642	9.953234	9.955753	58 1
3	0	45	0	933564	933607	933574	942464	945280	948020	950685	953277	955795	58 1
3	4	46	0	933615	933657	933622	942512	945326	948065	950729	953319	955836	58 1
3	8	47	0	933666	933707	933671	942559	945372	948110	950773	953362	955877	58 1
3	12	48	0	9.933718	9.933757	9.933720	9.942607	9.943418	9.948155	9.950817	9.953404	9.955919	58 1
3	16	49	0	933769	933807	933769	942654	945465	948200	950860	953447	955960	58 1
3	20	50	0	933820	933857	933817	942702	945511	948245	950904	953489	956001	58 1
3	24	51	0	933871	933907	933866	942749	945557	948290	950948	953532	956042	58 1
3	28	52	0	9.933923	9.933957	9.933915	9.942797	9.943603	9.948335	9.950991	9.953574	9.956084	58 1
3	32	53	0	933974	934007	933964	942844	945649	948379	951035	953617	956125	58 1
3	36	54	0	934025	934057	940012	942891	945695	948424	951079	953659	956166	58 1
3	40	55	0	934076	934107	940061	942939	945741	948469	951122	953702	956207	58 1
3	44	56	0	9.934127	9.934157	9.940109	9.942986	9.943788	9.948514	9.951166	9.953744	9.956248	58 1
3	48	57	0	934179	934206	940158	943033	945834	948559	951210	953786	956289	58 1
3	52	58	0	934230	934256	940206	943081	945880	948604	951253	953829	956331	58 1
3	56	59	0	934281	934306	940255	943128	945926	948648	951297	953871	956372	58 1
4	0	60	0	9.934332	9.934356	9.940303	9.943175	9.943972	9.948693	9.951340	9.953913	9.956413	0 0
Time.	h	m	s	224°	223°	222°	221°	220°	219°	218°	217°	216°	Time.
				14 ^h 56 ^m	14 ^h 52 ^m	14 ^h 48 ^m	14 ^h 44 ^m	14 ^h 40 ^m	14 ^h 36 ^m	14 ^h 32 ^m	14 ^h 28 ^m	14 ^h 24 ^m	

Log. Havensina. (C)

	9° 36'	9° 40'	9° 44'	9° 48'	9° 52'	9° 56'	10° 0'	10° 4'	10° 8'	E. T.
	144°	145°	146°	147°	148°	149°	150°	151°	152°	
0	9.956413	9.958339	9.961193	9.963474	9.965883	9.967821	9.969887	9.971883	9.973808	60.0
1	956454	958879	961231	963511	965719	967856	969921	971916	973840	59.56
2	956495	958919	961270	963549	965756	967891	969955	971948	973871	59.52
3	956536	958954	961308	963586	965792	967926	969989	971981	973904	59.48
4	956577	958998	961347	963623	965828	967961	969999	972014	973934	59.44
5	956618	959038	961385	963661	965864	967996	970057	972046	973965	59.40
6	956659	959078	961424	963698	965900	968026	970090	972079	973997	59.36
7	956699	959117	961463	963735	965936	968066	970124	972111	974028	59.32
8	956740	959157	961501	963773	965972	968101	970158	972144	974060	59.28
9	956781	959197	961539	963810	966008	968136	970191	972176	974091	59.24
10	956822	959236	961578	963847	966045	968170	970225	972209	974122	59.20
11	956863	959276	961616	963884	966081	968205	970259	972241	974154	59.16
12	956904	959316	961655	963922	966117	968240	970292	972274	974185	59.12
13	956945	959355	961693	963959	966153	968275	970326	972306	974216	59.08
14	956985	959395	961731	963996	966188	968310	970360	972339	974247	59.04
15	957026	959434	961770	964033	966224	968344	970393	972371	974279	59.00
16	957067	959474	961808	964070	966260	968379	970427	972403	974310	58.96
17	957108	959513	961846	964107	966296	968414	970460	972436	974341	58.92
18	957148	959553	961885	964144	966332	968448	970493	972468	974372	58.88
19	957189	959592	961923	964181	966368	968483	970527	972500	974403	58.84
20	957230	959632	961961	964218	966404	968518	970561	972533	974434	58.80
21	957270	959671	961999	964255	966440	968552	970594	972565	974465	58.76
22	957311	959710	962037	964292	966475	968587	970628	972597	974496	58.72
23	957351	959750	962076	964329	966511	968622	970661	972629	974528	58.68
24	957392	959789	962114	964366	966547	968656	970694	972662	974559	58.64
25	957433	959828	962152	964403	966583	968691	970728	972694	974590	58.60
26	957473	959868	962190	964440	966618	968725	970761	972726	974621	58.56
27	957514	959907	962228	964477	966654	968760	970794	972758	974652	58.52
28	957554	959946	962266	964514	966690	968794	970828	972790	974683	58.48
29	957594	959986	962304	964551	966725	968829	970861	972822	974714	58.44
30	957635	960025	962342	964588	966761	968863	970894	972855	974744	58.40
31	957675	960064	962380	964624	966797	968898	970927	972887	974775	58.36
32	957716	960103	962418	964661	966832	968932	970961	972919	974806	58.32
33	957756	960142	962456	964698	966868	968966	970994	972951	974837	58.28
34	957797	960182	962494	964735	966903	969001	971027	972983	974868	58.24
35	957837	960221	962532	964771	966939	969035	971060	973015	974899	58.20
36	957877	960260	962570	964808	966974	969069	971093	973047	974930	58.16
37	957918	960299	962608	964845	967010	969104	971127	973079	974960	58.12
38	957958	960338	962646	964882	967045	969138	971160	973111	974991	58.08
39	957998	960377	962684	964918	967081	969172	971193	973142	975022	58.04
40	958038	960416	962722	964956	967116	969207	971226	973174	975053	58.00
41	958079	960455	962759	964993	967152	969241	971259	973206	975083	57.96
42	958119	960494	962797	965030	967187	969275	971292	973238	975114	57.92
43	958159	960533	962835	965065	967223	969309	971325	973270	975145	57.88
44	958199	960572	962873	965101	967258	969343	971358	973302	975175	57.84
45	958239	960611	962910	965138	967293	969378	971391	973334	975206	57.80
46	958279	960650	962948	965174	967329	969412	971424	973365	975237	57.76
47	958319	960689	962986	965211	967364	969446	971457	973397	975267	57.72
48	958359	960728	963023	965247	967399	969480	971490	973429	975298	57.68
49	958400	960767	963061	965284	967434	969514	971523	973461	975328	57.64
50	958440	960805	963099	965320	967470	969548	971555	973492	975359	57.60
51	958480	960844	963137	965356	967505	969582	971588	973524	975389	57.56
52	958520	960883	963174	965393	967540	969616	971621	973556	975420	57.52
53	958560	960922	963211	965429	967575	969650	971654	973587	975450	57.48
54	958600	960961	963249	965466	967610	969684	971687	973619	975481	57.44
55	958640	960999	963287	965502	967646	969718	971720	973651	975511	57.40
56	958680	961038	963324	965539	967681	969752	971752	973682	975542	57.36
57	958720	961077	963362	965575	967716	969786	971785	973714	975572	57.32
58	958759	961115	963399	965611	967751	969820	971818	973745	975602	57.28
59	958799	961154	963436	965647	967786	969854	971851	973777	975633	57.24
60	958839	961193	963474	965683	967821	969887	971883	973808	975663	57.20
61	958879	961231	963511	965719	967856	969921	971916	973840	975694	57.16
62	958919	961270	963549	965756	967891	969955	971948	973871	975724	57.12
63	958954	961308	963586	965792	967926	969989	971981	973904	975754	57.08
64	958998	961347	963623	965828	967961	969999	972014	973934	975784	57.04
65	959038	961385	963661	965864	967996	970057	972046	973965	975814	57.00
66	959078	961424	963698	965900	968026	970090	972079	973997	975844	56.96
67	959117	961463	963735	965936	968066	970124	972111	974028	975874	56.92
68	959157	961501	963773	965972	968101	970158	972144	974060	975904	56.88
69	959197	961539	963810	966008	968136	970191	972176	974091	975934	56.84
70	959236	961578	963847	966045	968170	970225	972209	974122	975964	56.80
71	959276	961616	963884	966081	968205	970259	972241	974154	975994	56.76
72	959316	961655	963922	966117	968240	970292	972274	974185	976024	56.72
73	959355	961693	963959	966153	968275	970326	972306	974216	976054	56.68
74	959395	961731	963996	966188	968310	970360	972339	974247	976084	56.64
75	959434	961770	964033	966224	968344	970393	972371	974279	976114	56.60
76	959474	961808	964070	966260	968379	970427	972403	974310	976144	56.56
77	959513	961846	964107	966296	968414	970460	972436	974341	976174	56.52
78	959553	961885	964144	966332	968448	970493	972468	974372	976204	56.48
79	959592	961923	964181	966368	968483	970527	972500	974403	976234	56.44
80	959632	961961	964218	966404	968518	970561	972533	974434	976264	56.40
81	959671	961999	964255	966440	968552	970594	972565	974465	976294	56.36
82	959710	962037	964292	966475	968587	970628	972597	974496	976324	56.32
83	959750	962076	964329	966511	968622	970661	972629	974528	976354	56.28
84	959789	962114	964366	966547	968656	970694	972662	974559	976384	56.24
85	959828	962152	964403	966583	968691	970728	972694	974590	976414	56.20
86	959868	962190	964440	966618	968725	970761	972726	974621	976444	56.16
87	959907	962228	964477	966654	968760	970794	972758	974652	976474	56.12
88	959946	962266	964514	966690	968794	970828	972790	974683	976504	56.08
89	959986	962304	964551	966725	968829	970861	972822	974714	976534	56.04
90	960025	962342	964588	966761	968863	970894	972855	974744	976564	56.00
91	960064	962380	964624	966797	968898	970927	972887	974775	976594	55.96
92	960103	962418	964661	966832	968932	970961	972919	974806	976624	55.92
93	960142	962456	964698	966868	968966	970994	972951	974837	976654	55.88
94	960182	962494	964735	966903	969001	971027	972983	974868	976684	55.84
95	960221	962532	964771	966939	969035	971060	973015	974899	976714	55.80
96	960260	962570	964808	966974	969069	971093	973047	974930	976744	55.76
97	960299	962608	964845	967010	969104	971127	973079	974960	976774	55.72
98	960338	962646	964882	967045	969138	971160	973111	974991	976804	55.68
99	960377									

Log. Havenside. (5)

Time	10° 12'	10° 16'	10° 20'	10° 24'	10° 28'	10° 32'	10° 36'	10° 40'	10°
	153°	154°	155°	156°	157°	158°	159°	160°	1
0 0	9.975663	9.977448	9.979163	9.980809	9.982385	9.983891	9.985332	9.986703	9.9
0 1	9.975693	9.977477	9.979191	9.980836	9.982411	9.983917	9.985356	9.986725	9
0 2	9.975724	9.977508	9.979222	9.980867	9.982442	9.983948	9.985387	9.986756	9
0 3	9.975754	9.977538	9.979252	9.980897	9.982472	9.983978	9.985417	9.986785	9
0 4	9.975784	9.977568	9.979282	9.980927	9.982502	9.984008	9.985447	9.986814	9
0 5	9.975814	9.977598	9.979312	9.980957	9.982532	9.984038	9.985477	9.986844	9
0 6	9.975844	9.977628	9.979342	9.980987	9.982562	9.984068	9.985507	9.986873	9
0 7	9.975875	9.977658	9.979372	9.981017	9.982592	9.984098	9.985537	9.986903	9
0 8	9.975905	9.977688	9.979402	9.981047	9.982622	9.984128	9.985567	9.986933	9
0 9	9.975935	9.977718	9.979432	9.981077	9.982652	9.984158	9.985597	9.986963	9
0 10	9.975965	9.977748	9.979462	9.981107	9.982682	9.984188	9.985627	9.986993	9
0 11	9.975995	9.977778	9.979492	9.981137	9.982712	9.984218	9.985657	9.987023	9
0 12	9.976025	9.977808	9.979522	9.981167	9.982742	9.984248	9.985687	9.987053	9
0 13	9.976055	9.977838	9.979552	9.981197	9.982772	9.984278	9.985717	9.987083	9
0 14	9.976085	9.977868	9.979582	9.981227	9.982802	9.984308	9.985747	9.987113	9
0 15	9.976115	9.977898	9.979612	9.981257	9.982832	9.984338	9.985777	9.987143	9
0 16	9.976145	9.977928	9.979642	9.981287	9.982862	9.984368	9.985807	9.987173	9
0 17	9.976175	9.977958	9.979672	9.981317	9.982892	9.984398	9.985837	9.987203	9
0 18	9.976205	9.977988	9.979702	9.981347	9.982922	9.984428	9.985867	9.987233	9
0 19	9.976235	9.978018	9.979732	9.981377	9.982952	9.984458	9.985897	9.987263	9
0 20	9.976265	9.978048	9.979762	9.981407	9.982982	9.984488	9.985927	9.987293	9
0 21	9.976295	9.978078	9.979792	9.981437	9.983012	9.984518	9.985957	9.987323	9
0 22	9.976325	9.978108	9.979822	9.981467	9.983042	9.984548	9.985987	9.987353	9
0 23	9.976355	9.978138	9.979852	9.981497	9.983072	9.984578	9.986017	9.987383	9
0 24	9.976385	9.978168	9.979882	9.981527	9.983102	9.984608	9.986047	9.987413	9
0 25	9.976415	9.978198	9.979912	9.981557	9.983132	9.984638	9.986077	9.987443	9
0 26	9.976445	9.978228	9.979942	9.981587	9.983162	9.984668	9.986107	9.987473	9
0 27	9.976475	9.978258	9.979972	9.981617	9.983192	9.984698	9.986137	9.987503	9
0 28	9.976505	9.978288	9.979999	9.981647	9.983222	9.984728	9.986167	9.987533	9
0 29	9.976535	9.978318	9.980029	9.981677	9.983252	9.984758	9.986197	9.987563	9
0 30	9.976565	9.978348	9.980059	9.981707	9.983282	9.984788	9.986227	9.987593	9
0 31	9.976595	9.978378	9.980089	9.981737	9.983312	9.984818	9.986257	9.987623	9
0 32	9.976625	9.978408	9.980119	9.981767	9.983342	9.984848	9.986287	9.987653	9
0 33	9.976655	9.978438	9.980149	9.981797	9.983372	9.984878	9.986317	9.987683	9
0 34	9.976685	9.978468	9.980179	9.981827	9.983402	9.984908	9.986347	9.987713	9
0 35	9.976715	9.978498	9.980209	9.981857	9.983432	9.984938	9.986377	9.987743	9
0 36	9.976745	9.978528	9.980239	9.981887	9.983462	9.984968	9.986407	9.987773	9
0 37	9.976775	9.978558	9.980269	9.981917	9.983492	9.984998	9.986437	9.987803	9
0 38	9.976805	9.978588	9.980299	9.981947	9.983522	9.985028	9.986467	9.987833	9
0 39	9.976835	9.978618	9.980329	9.981977	9.983552	9.985058	9.986497	9.987863	9
0 40	9.976865	9.978648	9.980359	9.982007	9.983582	9.985088	9.986527	9.987893	9
0 41	9.976895	9.978678	9.980389	9.982037	9.983612	9.985118	9.986557	9.987923	9
0 42	9.976925	9.978708	9.980419	9.982067	9.983642	9.985148	9.986587	9.987953	9
0 43	9.976955	9.978738	9.980449	9.982097	9.983672	9.985178	9.986617	9.987983	9
0 44	9.976985	9.978768	9.980479	9.982127	9.983702	9.985208	9.986647	9.988013	9
0 45	9.977015	9.978798	9.980509	9.982157	9.983732	9.985238	9.986677	9.988043	9
0 46	9.977045	9.978828	9.980539	9.982187	9.983762	9.985268	9.986707	9.988073	9
0 47	9.977075	9.978858	9.980569	9.982217	9.983792	9.985298	9.986737	9.988103	9
0 48	9.977105	9.978888	9.980599	9.982247	9.983822	9.985328	9.986767	9.988133	9
0 49	9.977135	9.978918	9.980629	9.982277	9.983852	9.985358	9.986797	9.988163	9
0 50	9.977165	9.978948	9.980659	9.982307	9.983882	9.985388	9.986827	9.988193	9
0 51	9.977195	9.978978	9.980689	9.982337	9.983912	9.985418	9.986857	9.988223	9
0 52	9.977225	9.979008	9.980719	9.982367	9.983942	9.985448	9.986887	9.988253	9
0 53	9.977255	9.979038	9.980749	9.982397	9.983972	9.985478	9.986917	9.988283	9
0 54	9.977285	9.979068	9.980779	9.982427	9.984002	9.985508	9.986947	9.988313	9
0 55	9.977315	9.979098	9.980809	9.982457	9.984032	9.985538	9.986977	9.988343	9
0 56	9.977345	9.979128	9.980839	9.982487	9.984062	9.985568	9.987007	9.988373	9
0 57	9.977375	9.979158	9.980869	9.982517	9.984092	9.985598	9.987037	9.988403	9
0 58	9.977405	9.979188	9.980899	9.982547	9.984122	9.985628	9.987067	9.988433	9
0 59	9.977435	9.979218	9.980929	9.982577	9.984152	9.985658	9.987097	9.988463	9
0 60	9.977465	9.979248	9.980959	9.982607	9.984182	9.985688	9.987127	9.988493	9
1 00	9.977495	9.979278	9.980989	9.982637	9.984212	9.985718	9.987157	9.988523	9
1 01	9.977525	9.979308	9.981019	9.982667	9.984242	9.985748	9.987187	9.988553	9
1 02	9.977555	9.979338	9.981049	9.982697	9.984272	9.985778	9.987217	9.988583	9
1 03	9.977585	9.979368	9.981079	9.982727	9.984302	9.985808	9.987247	9.988613	9
1 04	9.977615	9.979398	9.981109	9.982757	9.984332	9.985838	9.987277	9.988643	9
1 05	9.977645	9.979428	9.981139	9.982787	9.984362	9.985868	9.987307	9.988673	9
1 06	9.977675	9.979458	9.981169	9.982817	9.984392	9.985898	9.987337	9.988703	9
1 07	9.977705	9.979488	9.981199	9.982847	9.984422	9.985928	9.987367	9.988733	9
1 08	9.977735	9.979518	9.981229	9.982877	9.984452	9.985958	9.987397	9.988763	9
1 09	9.977765	9.979548	9.981259	9.982907	9.984482	9.985988	9.987427	9.988793	9
1 10	9.977795	9.979578	9.981289	9.982937	9.984512	9.986018	9.987457	9.988823	9
1 11	9.977825	9.979608	9.981319	9.982967	9.984542	9.986048	9.987487	9.988853	9
1 12	9.977855	9.979638	9.981349	9.982997	9.984572	9.986078	9.987517	9.988883	9
1 13	9.977885	9.979668	9.981379	9.983027	9.984602	9.986108	9.987547	9.988913	9
1 14	9.977915	9.979698	9.981409	9.983057	9.984632	9.986138	9.987577	9.988943	9
1 15	9.977945	9.979728	9.981439	9.983087	9.984662	9.986168	9.987607	9.988973	9
1 16	9.977975	9.979758	9.981469	9.983117	9.984692	9.986198	9.987637	9.989003	9
1 17	9.978005	9.979788	9.981499	9.983147	9.984722	9.986228	9.987667	9.989033	9
1 18	9.978035	9.979818	9.981529	9.983177	9.984752	9.986258	9.987697	9.989063	9
1 19	9.978065	9.979848	9.981559	9.983207	9.984782	9.986288	9.987727	9.989093	9
1 20	9.978095	9.979878	9.981589	9.983237	9.984812	9.986318	9.987757	9.989123	9
1 21	9.978125	9.979908	9.981619	9.983267	9.984842	9.986348	9.987787	9.989153	9
1 22	9.978155	9.979938	9.981649	9.983297	9.984872	9.986378	9.987817	9.989183	9
1 23	9.978185	9.979968	9.981679	9.983327	9.984902	9.986408	9.987847	9.989213	9
1 24	9.978215	9.979998	9.981709	9.983357	9.984932	9.986438	9.987877	9.989243	9
1 25	9.978245	9.980028	9.981739	9.983387	9.984962	9.986468	9.987907	9.989273	9
1 26	9.978275	9.980058	9.981769	9.983417	9.984992	9.986498	9.987937	9.989303	9
1 27	9.978305	9.980088	9.981799	9.983447	9.985022	9.986528	9.987967	9.989333	9
1 28	9.978335	9.980118	9.981829	9.983477	9.985052	9.986558	9.987997	9.989363	9
1 29	9.978365	9.980148	9.981859	9.983507	9.985082	9.986588	9.988027	9.989393	9
1 30	9.978395	9.980178	9.981889	9.983537	9.985112	9.986618	9.988057	9.989423	9
1 31	9.978425	9.980208	9.981919	9.983567	9.985142	9.986648	9.988087	9.989453	9
1 32	9.978455	9.980238	9.981949	9.983597	9.985172	9.986678	9.988117	9.989483	9
1 33	9.978485	9.980268	9.981979	9.983627	9.985202	9.986708	9.988147	9.989513	9
1 34	9.978515	9.980298	9.982009	9.983657	9.985232	9.986738	9.988177	9.989543	9
1 35	9.978545	9.980328	9.982039	9.983687	9.985262	9.986768	9.988207	9	

Log. Havanna. (C)

Time	Lat	11° 24'	11° 28'	11° 32'	11° 36'	11° 40'	11° 44'	11° 48'	11° 52'	11° 56'	Long
		171°	172°	173°	174°	175°	176°	177°	178°	179°	
0	0	9.997318	9.997882	9.998378	9.998809	9.999173	9.999471	9.999702	9.999868	9.999967	60 0
0	4	9.997328	9.997890	9.998386	9.998815	9.999178	9.999475	9.999706	9.999870	9.999968	59 56
0	8	9.997338	9.997899	9.998394	9.998822	9.999184	9.999480	9.999709	9.999872	9.999969	59 52
0	12	9.997348	9.997908	9.998401	9.998829	9.999189	9.999484	9.999712	9.999874	9.999970	59 48
0	16	9.997358	9.997917	9.998409	9.998835	9.999195	9.999489	9.999715	9.999876	9.999971	59 44
0	20	9.997368	9.997926	9.998417	9.998842	9.999200	9.999493	9.999719	9.999878	9.999972	59 40
0	24	9.997378	9.997934	9.998424	9.998848	9.999205	9.999497	9.999722	9.999881	9.999973	59 36
0	28	9.997387	9.997943	9.998432	9.998855	9.999211	9.999501	9.999725	9.999883	9.999974	59 32
0	32	9.997397	9.997952	9.998440	9.998861	9.999216	9.999505	9.999728	9.999885	9.999975	59 28
0	36	9.997407	9.997960	9.998447	9.998868	9.999222	9.999510	9.999731	9.999887	9.999976	59 24
0	40	9.997417	9.997969	9.998455	9.998874	9.999227	9.999514	9.999734	9.999889	9.999977	59 20
0	44	9.997427	9.997978	9.998462	9.998881	9.999232	9.999518	9.999738	9.999891	9.999978	59 16
0	48	9.997436	9.997986	9.998470	9.998887	9.999238	9.999522	9.999741	9.999893	9.999979	59 12
0	52	9.997446	9.997995	9.998477	9.998893	9.999243	9.999527	9.999744	9.999895	9.999980	59 08
0	56	9.997456	9.998003	9.998484	9.998900	9.999248	9.999531	9.999747	9.999897	9.999981	59 04
1	0	9.997465	9.998012	9.998492	9.998906	9.999254	9.999535	9.999750	9.999899	9.999981	59 00
1	4	9.997475	9.998021	9.998500	9.998912	9.999259	9.999539	9.999753	9.999901	9.999982	58 56
1	8	9.997485	9.998029	9.998507	9.998919	9.999264	9.999543	9.999756	9.999903	9.999983	58 52
1	12	9.997494	9.998038	9.998514	9.998925	9.999269	9.999547	9.999759	9.999904	9.999984	58 48
1	16	9.997504	9.998046	9.998522	9.998931	9.999274	9.999551	9.999762	9.999906	9.999985	58 44
1	20	9.997513	9.998055	9.998529	9.998938	9.999280	9.999555	9.999765	9.999908	9.999986	58 40
1	24	9.997523	9.998063	9.998537	9.998944	9.999285	9.999559	9.999768	9.999910	9.999987	58 36
1	28	9.997533	9.998071	9.998544	9.998950	9.999290	9.999563	9.999771	9.999912	9.999988	58 32
1	32	9.997542	9.998080	9.998551	9.998956	9.999295	9.999567	9.999774	9.999914	9.999989	58 28
1	36	9.997552	9.998088	9.998559	9.998962	9.999300	9.999571	9.999776	9.999915	9.999989	58 24
1	40	9.997561	9.998097	9.998566	9.998969	9.999305	9.999575	9.999779	9.999917	9.999990	58 20
1	44	9.997571	9.998106	9.998573	9.998975	9.999310	9.999579	9.999782	9.999919	9.999991	58 16
1	48	9.997580	9.998113	9.998580	9.998981	9.999315	9.999583	9.999785	9.999921	9.999992	58 12
1	52	9.997589	9.998122	9.998588	9.998987	9.999320	9.999587	9.999788	9.999922	9.999993	58 08
1	56	9.997599	9.998130	9.998595	9.998993	9.999325	9.999591	9.999791	9.999924	9.999994	58 04
2	0	9.997608	9.998138	9.998602	9.999000	9.999330	9.999595	9.999793	9.999926	9.999995	58 00
2	4	9.997618	9.998147	9.998609	9.999005	9.999335	9.999599	9.999796	9.999927	9.999996	57 56
2	8	9.997627	9.998155	9.998616	9.999011	9.999340	9.999602	9.999799	9.999929	9.999997	57 52
2	12	9.997636	9.998163	9.998623	9.999017	9.999345	9.999606	9.999801	9.999930	9.999998	57 48
2	16	9.997646	9.998171	9.998630	9.999023	9.999350	9.999610	9.999804	9.999932	9.999999	57 44
2	20	9.997655	9.998179	9.998638	9.999029	9.999355	9.999614	9.999807	9.999934	9.999999	57 40
2	24	9.997664	9.998188	9.998645	9.999035	9.999360	9.999618	9.999809	9.999935	9.999999	57 36
2	28	9.997674	9.998195	9.998652	9.999041	9.999364	9.999621	9.999812	9.999937	9.999999	57 32
2	32	9.997683	9.998204	9.998659	9.999047	9.999369	9.999625	9.999814	9.999938	9.999999	57 28
2	36	9.997692	9.998212	9.998666	9.999053	9.999374	9.999629	9.999817	9.999940	9.999999	57 24
2	40	9.997701	9.998220	9.998673	9.999059	9.999379	9.999632	9.999820	9.999941	9.999999	57 20
2	44	9.997710	9.998228	9.998680	9.999065	9.999384	9.999636	9.999822	9.999943	9.999999	57 16
2	48	9.997720	9.998236	9.998687	9.999071	9.999388	9.999640	9.999825	9.999944	9.999999	57 12
2	52	9.997729	9.998244	9.998694	9.999076	9.999393	9.999643	9.999828	9.999946	9.999999	57 08
2	56	9.997738	9.998252	9.998701	9.999082	9.999398	9.999647	9.999830	9.999947	9.999999	57 04
3	0	9.997747	9.998260	9.998707	9.999088	9.999402	9.999651	9.999832	9.999948	9.999999	57 00
3	4	9.997756	9.998268	9.998714	9.999094	9.999407	9.999654	9.999835	9.999950	9.999999	56 56
3	8	9.997765	9.998276	9.998721	9.999100	9.999412	9.999658	9.999837	9.999951	9.999999	56 52
3	12	9.997774	9.998284	9.998728	9.999105	9.999416	9.999661	9.999840	9.999952	9.999999	56 48
3	16	9.997783	9.998292	9.998735	9.999111	9.999421	9.999665	9.999842	9.999953	9.999999	56 44
3	20	9.997792	9.998300	9.998742	9.999116	9.999426	9.999668	9.999845	9.999955	9.999999	56 40
3	24	9.997801	9.998308	9.998748	9.999123	9.999430	9.999672	9.999847	9.999956	9.999999	56 36
3	28	9.997810	9.998316	9.998755	9.999128	9.999434	9.999675	9.999849	9.999958	9.999999	56 32
3	32	9.997819	9.998324	9.998762	9.999134	9.999439	9.999679	9.999852	9.999959	10.000000	56 28
3	36	9.997828	9.998332	9.998769	9.999139	9.999444	9.999682	9.999854	9.999960	10.000000	56 24
3	40	9.997837	9.998340	9.998775	9.999145	9.999448	9.999686	9.999856	9.999961	10.000000	56 20
3	44	9.997846	9.998347	9.998782	9.999151	9.999453	9.999689	9.999859	9.999962	10.000000	56 16
3	48	9.997855	9.998355	9.998789	9.999156	9.999457	9.999692	9.999861	9.999964	10.000000	56 12
3	52	9.997864	9.998363	9.998796	9.999162	9.999462	9.999696	9.999863	9.999965	10.000000	56 08
3	56	9.997873	9.998371	9.998802	9.999167	9.999466	9.999699	9.999865	9.999966	10.000000	56 04
4	0	9.997882	9.998378	9.998809	9.999173	9.999471	9.999702	9.999868	9.999967	10.000000	56 00
Time		188°	187°	186°	185°	184°	183°	182°	181°	180°	Time
		12° 32'	12° 28'	12° 24'	12° 20'	12° 16'	12° 12'	12° 8'	12° 4'	12° 0'	

TO FIND COLOGARITHMS OF NUMBERS.

TAKE out the logarithm from the table of logarithms, and subtract it (characteristic as well as mantissa) from 10 in the following manner: subtract every figure from 9, proceeding from left to right, to the last significant figure, which subtract from 10. Cast out as many tens in characteristic of result as there have been cologarithms used.

Thus, to find $\log. 5306 - \log. 4814 + \log. 8192 - \log. 612$, using addition only:—

log.	5306	.	.	.	.	.	.	3.724767
colog.	4814	.	.	.	.	.	.	6.317494
log.	8192	.	.	.	.	.	.	3.913390
colog.	612	.	.	.	.	.	.	7.213249
<hr/>								
	log. 14.76.	.	.	.	.	.	.	1.168900

N.B. The cologarithm may thus be taken *by sight* from a table of logarithms, by persons accustomed to the use of tables, as easily as the logarithm itself, and with greater security from material error, than from a table of cologarithms. The rule for finding the characteristic of the cologarithm differing from the rule by which the characteristic of the logarithm is found, some considerable probability of serious error is involved in the use of tables of cologarithms.

In the case of negative characteristics, their subtraction from 9 being apparently an addition, it is often as well to cast out the 10 from the cologarithm at once before proceeding to sum.

Thus, to find $\log. 53.06 - \log. .04814 + \log. 8.192 - \log. .00612$:—

log.	53.06	=	.	.	.	1.724767
colog.	.04814	=	.	.	.	× 1.317494
log.	8.192	=	.	.	.	0.913390
colog.	.00612	=	.	.	.	× 2.213249
<hr/>						
						6.168900

Log^s. of numbers from one to a thousand.

(u.)

Log.	No.	Log.	No.	Log.	No.	Log.	No.	Log.	No.	Log.	No.	Log.	No.	Log.	No.
000	73	.063323	143	.161368	217	.336460	289	.460808	361	.557507	433	.630488			
.030	74	.068232	146	.164353	218	.338457	290	.462398	362	.558700	434	.637490			
.121	75	.075061	147	.167317	219	.340444	291	.463893	363	.559907	435	.638489			
.200	76	.080814	148	.170263	220	.342423	292	.465383	364	.561101	436	.639486			
.270	77	.086491	149	.173186	221	.344302	293	.466868	365	.562293	437	.640481			
.351	78	.092095	150	.176091	222	.346353	294	.468347	366	.563481	438	.641474			
.408	79	.097627	151	.178977	223	.348305	295	.469822	367	.564666	439	.642465			
.480	80	.103090	152	.181844	224	.350248	296	.471292	368	.565848	440	.643453			
.523	81	.108485	153	.184691	225	.352163	297	.472756	369	.567026	441	.644439			
.580	82	.113814	154	.187521	226	.354108	298	.474216	370	.568202	442	.645422			
.603	83	.119078	155	.190332	227	.356026	299	.475671	371	.569374	443	.646404			
.681	84	.124279	156	.193125	228	.357936	300	.477121	372	.570543	444	.647383			
.743	85	.129419	157	.195900	229	.359835	301	.478567	373	.571709	445	.648360			
.788	86	.134498	158	.198657	230	.361728	302	.480007	374	.572872	446	.649335			
.801	87	.139519	159	.201397	231	.363612	303	.481443	375	.574031	447	.650308			
.820	88	.144483	160	.204120	232	.365511	304	.482874	376	.575188	448	.651278			
.849	89	.149390	161	.206826	233	.367366	305	.484300	377	.576341	449	.652246			
.873	90	.154243	162	.209515	234	.369216	306	.485721	378	.577492	450	.653213			
.904	91	.159041	163	.212188	235	.371068	307	.487138	379	.578639	451	.654177			
.930	92	.163788	164	.214844	236	.372919	308	.488551	380	.579784	452	.655138			
.959	93	.168483	165	.217484	237	.374748	309	.489958	381	.580925	453	.656098			
.983	94	.173128	166	.220108	238	.376577	310	.491362	382	.582063	454	.657056			
1.000	95	.177724	167	.222716	239	.378398	311	.492769	383	.583199	455	.658011			
	96	.182271	168	.225309	240	.380211	312	.494165	384	.584331	456	.658965			
	97	.186772	169	.227887	241	.382017	313	.495544	385	.585461	457	.659910			
	98	.191226	170	.230449	242	.383815	314	.496930	386	.586587	458	.660866			
	99	.195635	171	.232998	243	.385606	315	.498311	387	.587711	459	.661818			
	100	.000000	172	.235528	244	.387390	316	.499687	388	.588832	460	.662758			
	101	.004321	173	.238046	245	.389166	317	.501059	389	.589950	461	.663701			
	102	.008600	174	.240549	246	.390935	318	.502427	390	.591065	462	.664642			
	103	.012837	175	.243038	247	.392697	319	.503791	391	.592177	463	.665581			
	104	.017033	176	.245513	248	.394452	320	.505150	392	.593286	464	.666518			
	105	.021189	177	.247973	249	.396199	321	.506505	393	.594393	465	.667453			
	106	.025306	178	.250420	250	.397940	322	.507856	394	.595496	466	.668386			
	107	.029384	179	.252853	251	.399674	323	.509203	395	.596597	467	.669317			
	108	.033424	180	.255273	252	.401401	324	.510545	396	.597695	468	.670246			
	109	.037427	181	.257679	253	.403121	325	.511883	397	.598791	469	.671173			
	110	.041393	182	.260071	254	.404834	326	.513218	398	.599883	470	.672098			
	111	.045323	183	.262451	255	.406540	327	.514548	399	.600973	471	.673021			
	112	.049218	184	.264818	256	.408240	328	.515874	400	.602060	472	.673943			
	113	.053078	185	.267173	257	.409933	329	.517198	401	.603144	473	.674861			
	114	.056906	186	.269513	258	.411620	330	.518514	402	.604226	474	.675778			
	115	.060698	187	.271842	259	.413300	331	.519828	403	.605305	475	.676694			
	116	.064458	188	.274158	260	.414973	332	.521138	404	.606381	476	.677607			
	117	.068186	189	.276462	261	.416641	333	.522444	405	.607455	477	.678518			
	118	.071882	190	.278754	262	.418301	334	.523746	406	.608526	478	.679428			
	119	.075547	191	.281033	263	.419956	335	.525045	407	.609594	479	.680336			
	120	.079181	192	.283301	264	.421604	336	.526339	408	.610660	480	.681241			
	121	.082785	193	.285557	265	.423246	337	.527630	409	.611723	481	.682145			
	122	.086360	194	.287802	266	.424882	338	.528917	410	.612784	482	.683047			
	123	.089905	195	.290035	267	.426511	339	.530200	411	.613842	483	.683947			
	124	.093422	196	.292256	268	.428135	340	.531479	412	.614897	484	.684845			
	125	.096910	197	.294466	269	.429752	341	.532754	413	.615950	485	.685742			
	126	.100371	198	.296665	270	.431364	342	.534026	414	.617000	486	.686636			
	127	.103804	199	.298853	271	.432969	343	.535294	415	.618048	487	.687529			
	128	.107210	200	.301030	272	.434569	344	.536558	416	.619093	488	.688420			
	129	.110590	201	.303196	273	.436163	345	.537819	417	.620136	489	.689309			
	130	.113943	202	.305351	274	.437751	346	.539078	418	.621176	490	.690196			
	131	.117271	203	.307496	275	.439333	347	.540329	419	.622214	491	.691081			
	132	.120574	204	.309630	276	.440909	348	.541579	420	.623249	492	.691966			
	133	.123852	205	.311754	277	.442480	349	.542825	421	.624282	493	.692847			
	134	.127105	206	.313867	278	.444045	350	.544068	422	.625312	494	.693727			
	135	.130334	207	.315970	279	.445604	351	.545307	423	.626340	495	.694606			
	136	.133530	208	.318003	280	.447158	352	.546543	424	.627366	496	.695482			
	137	.136721	209	.320146	281	.448706	353	.547775	425	.628389	497	.696356			
	138	.139879	210	.322219	282	.450249	354	.549003	426	.629410	498	.697229			
	139	.143015	211	.324282	283	.451786	355	.550228	427	.630428	499	.698101			
	140	.146128	212	.326336	284	.453318	356	.551450	428	.631444	500	.698970			
	141	.149219	213	.328380	285	.454845	357	.552668	429	.632457	501	.699838			
	142	.152288	214	.330414	286	.456366	358	.553883	430	.633468	502	.700704			
	143	.155336	215	.332438	287	.457882	359	.555094	431	.634477	503	.701568			
	144	.158362	216	.334454	288	.459392	360	.556303	432	.635484	504	.702431			

Log₁₀ of numbers from one to a thousand.

(u.)

No.	Log.	No.	Log.	No.	Log.	No.	Log.	No.	Log.	No.	Log.
505	.703291	578	.760422	647	.810904	716	.856124	789	.897077	860	.934498
506	.704151	577	.761176	646	.811575	715	.856729	790	.897627	861	.935003
507	.705008	576	.761928	645	.812245	714	.857333	791	.898176	862	.935507
508	.705864	575	.762679	644	.812913	713	.857936	792	.898725	863	.936011
509	.706718	574	.763428	643	.813581	712	.858537	793	.899273	864	.936514
510	.707570	573	.764176	642	.814248	711	.859138	794	.899821	865	.937016
511	.708421	572	.764923	641	.814913	710	.859739	795	.900367	866	.937518
512	.709270	571	.765669	640	.815578	709	.860338	796	.900913	867	.938019
513	.710117	570	.766413	639	.816241	708	.860937	797	.901458	868	.938520
514	.710963	569	.767156	638	.816904	707	.861534	798	.902003	869	.939020
515	.711807	568	.767898	637	.817565	706	.862131	799	.902547	870	.939519
516	.712650	567	.768638	636	.818226	705	.862728	800	.903090	871	.940018
517	.713491	566	.769377	635	.818885	704	.863323	801	.903633	872	.940516
518	.714330	565	.770116	634	.819544	703	.863917	802	.904174	873	.941014
519	.715167	564	.770852	633	.820201	702	.864511	803	.904716	874	.941511
520	.716003	563	.771587	632	.820858	701	.865104	804	.905256	875	.942008
521	.716838	562	.772322	631	.821514	700	.865696	805	.905796	876	.942504
522	.717671	561	.773055	630	.822168	699	.866287	806	.906335	877	.943000
523	.718502	560	.773786	629	.822822	698	.866878	807	.906874	878	.943495
524	.719331	559	.774515	628	.823474	697	.867467	808	.907411	879	.943989
525	.720159	558	.775246	627	.824126	696	.868056	809	.907949	880	.944483
526	.720986	557	.775974	626	.824778	695	.868644	810	.908485	881	.944978
527	.721811	556	.776701	625	.825426	694	.869232	811	.909021	882	.945468
528	.722634	555	.777427	624	.826075	693	.869819	812	.909556	883	.945961
529	.723458	554	.778151	623	.826723	692	.870404	813	.910091	884	.946452
530	.724278	553	.778874	622	.827369	691	.870989	814	.910624	885	.946943
531	.725095	552	.779596	621	.828015	690	.871573	815	.911158	886	.947434
532	.725912	551	.780317	620	.828660	689	.872156	816	.911690	887	.947924
533	.726727	550	.781037	619	.829304	688	.872739	817	.912222	888	.948413
534	.727541	549	.781755	618	.829947	687	.873321	818	.912753	889	.948902
535	.728354	548	.782473	617	.830589	686	.873902	819	.913284	890	.949390
536	.729165	547	.783189	616	.831230	685	.874482	820	.913814	891	.949878
537	.729974	546	.783904	615	.831870	684	.875061	821	.914343	892	.950365
538	.730782	545	.784617	614	.832509	683	.875640	822	.914872	893	.950851
539	.731589	544	.785330	613	.833147	682	.876218	823	.915400	894	.951338
540	.732394	543	.786041	612	.833784	681	.876795	824	.915927	895	.951823
541	.733197	542	.786751	611	.834421	680	.877371	825	.916454	896	.952306
542	.733999	541	.787460	610	.835056	679	.877947	826	.916980	897	.952792
543	.734800	540	.788168	609	.835691	678	.878522	827	.917506	898	.953276
544	.735600	539	.788875	608	.836324	677	.879096	828	.918030	899	.953760
545	.736397	538	.789581	607	.836957	676	.879669	829	.918555	900	.954243
546	.737193	537	.790285	606	.837588	675	.880242	830	.919078	901	.954725
547	.737987	536	.790988	605	.838219	674	.880814	831	.919601	902	.955207
548	.738781	535	.791691	604	.838849	673	.881385	832	.920123	903	.955688
549	.739575	534	.792392	603	.839478	672	.881955	833	.920645	904	.956168
550	.740368	533	.793092	602	.840106	671	.882525	834	.921166	905	.956649
551	.741152	532	.793790	601	.840733	670	.883093	835	.921686	906	.957128
552	.741939	531	.794488	600	.841359	669	.883661	836	.922200	907	.957607
553	.742725	530	.795185	599	.841985	668	.884229	837	.922725	908	.958086
554	.743510	529	.795880	598	.842609	667	.884795	838	.923244	909	.958564
555	.744293	528	.796574	597	.843233	666	.885361	839	.923762	910	.959041
556	.745075	527	.797268	596	.843855	665	.885926	840	.924279	911	.959518
557	.745855	526	.797960	595	.844477	664	.886491	841	.924796	912	.959996
558	.746634	525	.798651	594	.845098	663	.887054	842	.925312	913	.960471
559	.747412	524	.799341	593	.845718	662	.887617	843	.925828	914	.960946
560	.748188	523	.800029	592	.846337	661	.888179	844	.926342	915	.961421
561	.748963	522	.800717	591	.846955	660	.888741	845	.926857	916	.961895
562	.749736	521	.801404	590	.847573	659	.889302	846	.927370	917	.962369
563	.750508	520	.802089	589	.848189	658	.889862	847	.927883	918	.962843
564	.751279	519	.802774	588	.848805	657	.890421	848	.928396	919	.963316
565	.752048	518	.803457	587	.849419	656	.890980	849	.928909	920	.963788
566	.752816	517	.804139	586	.850033	655	.891537	850	.929419	921	.964260
567	.753583	516	.804821	585	.850646	654	.892095	851	.929930	922	.964731
568	.754348	515	.805501	584	.851258	653	.892651	852	.930440	923	.965202
569	.755112	514	.806180	583	.851870	652	.893207	853	.930949	924	.965672
570	.755875	513	.806858	582	.852480	651	.893762	854	.931458	925	.966142
571	.756636	512	.807535	581	.853090	650	.894316	855	.931966	926	.966611
572	.757396	511	.808211	580	.853698	649	.894870	856	.932474	927	.967080
573	.758155	510	.808886	579	.854306	648	.895423	857	.932981	928	.967548
574	.758912	509	.809560	578	.854913	647	.895976	858	.933487	929	.968016
575	.759668	508	.810233	577	.855519	646	.896526	859	.933993	930	.968483

Log. .000000 to .130012						No. 1000 to 1349.						(u.)					
Part	No.	Log.	Part	No.	Log.	Part	No.	Log.	Part	No.	Log.	Part	No.	Log.	Part	No.	Log.
000	1070	.029384	000	1140	.056905	000	1210	.082785	000	1280	.107210	000					
043	1	.029789	040	1	.057286	038	1	.083144	030	1	.107549	031					
086	2	.030195	081	2	.057666	076	2	.083503	071	2	.107888	067					
130	3	.030600	121	3	.058046	114	3	.083861	107	3	.108227	101					
173	4	.031004	162	4	.058426	152	4	.084219	143	4	.108565	098					
216	5	.031408	202	5	.058805	190	5	.084576	179	5	.108903	169					
259	6	.031812	242	6	.059185	228	6	.084934	214	6	.109241	203					
303	7	.032216	283	7	.059563	266	7	.085291	250	7	.109578	237					
346	8	.032619	323	8	.059942	304	8	.085647	286	8	.109916	270					
389	9	.033021	361	9	.060320	342	9	.086004	322	9	.110253	304					
000	1080	.033424	000	1150	.060698	000	1220	.086360	000	1290	.110590	000					
043	1	.033826	040	1	.061075	038	1	.086716	035	1	.110926	034					
086	2	.034227	080	2	.061452	075	2	.087071	071	2	.111262	067					
128	3	.034628	120	3	.061829	113	3	.087426	106	3	.111598	101					
171	4	.035029	160	4	.062206	150	4	.087781	142	4	.111934	134					
214	5	.035430	200	5	.062582	188	5	.088136	177	5	.112270	168					
257	6	.035830	240	6	.062958	226	6	.088490	213	6	.112606	201					
300	7	.036229	279	7	.063333	263	7	.088845	248	7	.112940	236					
343	8	.036629	321	8	.063709	301	8	.089198	284	8	.113275	268					
385	9	.037028	361	9	.064083	338	9	.089552	319	9	.113609	302					
000	1090	.037426	000	1160	.064458	000	1230	.089905	000	1300	.113943	000					
042	1	.037825	040	1	.064832	037	1	.090258	035	1	.114277	033					
085	2	.038223	079	2	.065206	075	2	.090611	070	2	.114611	067					
127	3	.038620	119	3	.065580	112	3	.090963	106	3	.114944	100					
170	4	.039017	159	4	.065953	149	4	.091315	141	4	.115278	133					
212	5	.039414	198	5	.066326	187	5	.091667	176	5	.115610	167					
254	6	.039811	238	6	.066699	224	6	.092018	211	6	.115943	200					
297	7	.040207	278	7	.067071	262	7	.092370	246	7	.116276	233					
339	8	.040604	318	8	.067443	298	8	.092721	282	8	.116608	267					
382	9	.040998	357	9	.067814	336	9	.093071	317	9	.116940	300					
000	1100	.041393	000	1170	.068186	000	1240	.093422	000	1310	.117271	000					
042	1	.041787	039	1	.068557	037	1	.093772	030	1	.117603	033					
084	2	.042182	079	2	.068928	074	2	.094122	070	2	.117934	066					
126	3	.042575	118	3	.069298	111	3	.094471	105	3	.118265	099					
168	4	.042969	157	4	.069668	148	4	.094820	140	4	.118595	132					
210	5	.043362	196	5	.070038	185	5	.095169	175	5	.118926	165					
252	6	.043755	236	6	.070407	223	6	.095518	210	6	.119256	198					
294	7	.044148	275	7	.070776	259	7	.095866	245	7	.119586	231					
336	8	.044540	314	8	.071145	296	8	.096215	280	8	.119915	264					
378	9	.044931	353	9	.071514	333	9	.096562	315	9	.120245	297					
000	1110	.045323	000	1180	.071882	000	1250	.096910	000	1320	.120674	000					
042	1	.045714	039	1	.072250	037	1	.097257	036	1	.120993	033					
083	2	.046105	078	2	.072617	073	2	.097604	069	2	.121321	066					
125	3	.046495	117	3	.072985	110	3	.097951	104	3	.121650	098					
166	4	.046885	156	4	.073352	147	4	.098297	138	4	.121988	131					
208	5	.047275	195	5	.073718	183	5	.098644	173	5	.122316	164					
250	6	.047664	234	6	.074085	220	6	.098990	208	6	.122643	197					
291	7	.048053	273	7	.074451	256	7	.099335	240	7	.122971	230					
333	8	.048442	312	8	.074816	293	8	.099681	277	8	.123308	262					
374	9	.048830	351	9	.075182	330	9	.100026	311	9	.123635	295					
000	1120	.049218	000	1190	.075547	000	1260	.100370	000	1330	.123962	000					
041	1	.049606	039	1	.075912	036	1	.100715	034	1	.124290	032					
082	2	.049993	077	2	.076276	073	2	.101059	069	2	.124618	065					
124	3	.050380	116	3	.076640	109	3	.101403	103	3	.124946	098					
165	4	.050766	154	4	.077004	145	4	.101747	137	4	.125274	130					
206	5	.051152	193	5	.077368	181	5	.102090	172	5	.125602	163					
247	6	.051538	232	6	.077731	218	6	.102434	206	6	.125930	195					
288	7	.051924	270	7	.078094	254	7	.102777	240	7	.126258	228					
330	8	.052300	309	8	.078457	290	8	.103119	275	8	.126586	260					
371	9	.052684	347	9	.078819	327	9	.103462	309	9	.126914	293					
000	1130	.053078	000	1200	.079181	000	1270	.103804	000	1340	.127241	000					
041	1	.053463	038	1	.079543	036	1	.104146	034	1	.127569	032					
082	2	.053846	077	2	.079904	072	2	.104487	068	2	.127897	065					
122	3	.054230	115	3	.080266	108	3	.104828	102	3	.128225	097					
163	4	.054613	153	4	.080626	144	4	.105169	136	4	.128553	129					
204	5	.054996	191	5	.080987	180	5	.105510	170	5	.128881	161					
245	6	.055378	230	6	.081347	216	6	.105851	204	6	.129209	194					
286	7	.055760	268	7	.081707	252	7	.106191	238	7	.129537	226					
328	8	.056142	306	8	.082067	288	8	.106531	272	8	.129865	258					
367	9	.056524	345	9	.082426	324	9	.106870	306	9	.130193	291					

Log. 130334 to 230193

No. 1350 to 1699.

(u.)

No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.
1350	.130334	000	1420	.152288	000	1490	.173186	000	1560	.193125	000	1630	.21211	
1	.130655	032	1	.152504	000	1	.173478	029	1	.193403	028	1	.21211	
2	.130977	064	2	.152900	061	2	.173769	058	2	.193681	056	2	.21275	
3	.131298	096	3	.153205	091	3	.174060	087	3	.193959	083	3	.21298	
4	.131619	128	4	.153510	122	4	.174351	116	4	.194237	111	4	.21326	
5	.131939	160	5	.153811	152	5	.174641	145	5	.194514	139	5	.21351	
6	.132260	192	6	.154119	183	6	.174932	175	6	.194792	168	6	.21378	
7	.132580	224	7	.154424	213	7	.175222	204	7	.195069	194	7	.21404	
8	.132900	256	8	.154728	244	8	.175512	233	8	.195346	222	8	.21431	
9	.133219	288	9	.155032	274	9	.175802	261	9	.195623	250	9	.21457	
1360	.133539	000	1430	.155336	000	1500	.176001	000	1570	.195900	000	1640	.21488	
1	.133858	032	1	.155640	030	1	.176381	029	1	.196176	027	1	.21510	
2	.134177	064	2	.155943	000	2	.176670	000	2	.196452	055	2	.21537	
3	.134496	096	3	.156246	091	3	.176959	086	3	.196729	083	3	.21563	
4	.134814	127	4	.156549	121	4	.177248	115	4	.197005	110	4	.21590	
5	.135133	159	5	.156852	151	5	.177536	144	5	.197281	138	5	.21616	
6	.135451	191	6	.157154	181	6	.177825	173	6	.197556	166	6	.21643	
7	.135768	223	7	.157457	211	7	.178113	202	7	.197832	193	7	.21669	
8	.136086	255	8	.157759	242	8	.178401	231	8	.198107	221	8	.21696	
9	.136403	287	9	.158061	273	9	.178689	259	9	.198382	248	9	.21723	
1370	.136721	000	1440	.158362	000	1510	.178977	000	1580	.198667	000	1650	.21748	
1	.137037	032	1	.158664	030	1	.179264	029	1	.198932	027	1	.21774	
2	.137354	063	2	.158965	060	2	.179552	057	2	.199206	055	2	.21801	
3	.137670	094	3	.159266	090	3	.179839	086	3	.199481	083	3	.21827	
4	.137987	126	4	.159567	120	4	.180126	115	4	.199755	110	4	.21853	
5	.138303	158	5	.159868	150	5	.180413	144	5	.200029	137	5	.21879	
6	.138618	189	6	.160168	180	6	.180699	172	6	.200303	164	6	.21906	
7	.138934	221	7	.160468	210	7	.180986	201	7	.200577	192	7	.21933	
8	.139249	252	8	.160769	240	8	.181272	230	8	.200850	219	8	.21959	
9	.139564	284	9	.161068	270	9	.181558	259	9	.201124	247	9	.21986	
1380	.139879	000	1450	.161368	000	1520	.181844	000	1590	.201397	000	1660	.22010	
1	.140194	031	1	.161667	030	1	.182129	028	1	.201670	027	1	.22037	
2	.140508	063	2	.161967	060	2	.182415	057	2	.201943	054	2	.22063	
3	.140822	094	3	.162266	089	3	.182700	086	3	.202216	082	3	.22089	
4	.141136	125	4	.162564	119	4	.182985	114	4	.202488	109	4	.22116	
5	.141450	157	5	.162863	149	5	.183270	143	5	.202761	136	5	.22141	
6	.141763	188	6	.163161	179	6	.183554	171	6	.203033	163	6	.22167	
7	.142076	219	7	.163460	209	7	.183839	200	7	.203305	191	7	.22193	
8	.142389	251	8	.163757	239	8	.184123	228	8	.203577	218	8	.22219	
9	.142702	282	9	.164055	269	9	.184407	256	9	.203848	246	9	.22243	
1390	.143015	000	1460	.164353	000	1530	.184691	000	1600	.204120	000	1670	.22271	
1	.143327	031	1	.164650	030	1	.184975	000	1	.204391	027	1	.22297	
2	.143639	062	2	.164947	059	2	.185259	057	2	.204662	054	2	.22323	
3	.143951	093	3	.165244	088	3	.185542	086	3	.204933	081	3	.22349	
4	.144263	124	4	.165541	119	4	.185825	113	4	.205204	108	4	.22375	
5	.144574	155	5	.165838	148	5	.186108	142	5	.205475	135	5	.22401	
6	.144885	187	6	.166134	178	6	.186391	170	6	.205745	162	6	.22427	
7	.145196	218	7	.166430	207	7	.186674	198	7	.206016	189	7	.22453	
8	.145507	249	8	.166726	237	8	.186958	227	8	.206286	218	8	.22479	
9	.145818	280	9	.167022	267	9	.187239	256	9	.206556	243	9	.22505	
1400	.146128	000	1470	.167317	000	1540	.187521	000	1610	.206826	000	1680	.22530	
1	.146438	031	1	.167613	029	1	.187803	028	1	.207095	027	1	.22556	
2	.146748	062	2	.167908	058	2	.188084	056	2	.207365	054	2	.22582	
3	.147058	093	3	.168203	088	3	.188366	084	3	.207634	081	3	.22608	
4	.147367	124	4	.168497	117	4	.188647	113	4	.207903	108	4	.22634	
5	.147678	155	5	.168792	147	5	.188928	141	5	.208172	135	5	.22660	
6	.147988	186	6	.169086	177	6	.189209	169	6	.208441	162	6	.22685	
7	.148294	217	7	.169380	206	7	.189490	197	7	.208710	188	7	.22711	
8	.148603	248	8	.169674	236	8	.189771	225	8	.208978	216	8	.22737	
9	.148911	279	9	.169968	265	9	.190051	253	9	.209247	241	9	.22763	
1410	.149219	000	1480	.170262	000	1550	.190332	000	1620	.209515	000	1690	.22788	
1	.149527	031	1	.170555	029	1	.190612	028	1	.209783	027	1	.22814	
2	.149835	061	2	.170848	058	2	.190892	056	2	.210051	054	2	.22840	
3	.150142	092	3	.171141	088	3	.191171	084	3	.210318	080	3	.22865	
4	.150449	123	4	.171434	117	4	.191451	112	4	.210586	107	4	.22891	
5	.150756	154	5	.171726	146	5	.191730	140	5	.210853	134	5	.22917	
6	.151063	184	6	.172019	175	6	.192010	168	6	.211120	161	6	.22943	
7	.151370	215	7	.172311	204	7	.192289	196	7	.211388	187	7	.22969	
8	.151678	246	8	.172603	234	8	.192567	224	8	.211654	214	8	.22995	
9	.151983	277	9	.172896	263	9	.192846	252	9	.211921	240	9	.23021	

Log. .230449 to .311542

No. 1700 to 2049.

(u.)

Part	No.	Log.	Part	No.	Log.	Part	No.	Log.	Part	No.	Log.	Part
49 000	1770	.247973	000	1840	.264818	000	1910	.281033	000	1980	.296665	000
04 025	1	.248219	025	1	.265054	023	1	.281261	023	1	.296884	022
60 051	4	.248464	049	2	.265290	047	2	.281488	045	2	.297104	044
16 076	11	.248709	074	3	.265525	070	3	.281716	069	3	.297325	066
70 102	4	.248954	098	4	.265761	094	4	.281942	091	4	.297547	088
24 127	11	.249198	123	5	.265996	117	5	.282169	113	5	.297769	109
79 153	6	.249443	147	6	.266232	141	6	.282396	118	6	.297991	131
33 178	7	.249687	172	7	.266467	146	7	.282622	159	7	.298213	144
86 204	8	.249932	196	8	.266702	188	8	.282849	181	8	.298435	175
42 229	9	.250176	220	9	.266937	211	9	.283075	204	9	.298657	197
96 000	1780	.260420	000	1850	.267172	000	1920	.283301	000	1990	.298880	000
50 025	1	.260654	024	1	.267406	023	1	.283527	023	1	.299102	022
04 051	2	.260898	049	2	.267641	047	2	.283753	045	2	.299324	044
57 076	3	.261131	073	3	.267875	070	3	.283979	068	3	.299546	065
11 101	4	.261365	097	4	.268110	094	4	.284205	090	4	.299768	087
64 127	5	.261598	121	5	.268344	117	5	.284431	113	5	.299990	109
17 152	6	.261831	145	6	.268578	141	6	.284656	135	6	.300212	144
70 177	7	.262065	171	7	.268812	164	7	.284882	158	7	.300434	166
23 202	8	.262297	195	8	.269046	188	8	.285107	180	8	.300656	174
76 228	9	.262530	219	9	.269279	211	9	.285332	203	9	.300878	196
28 000	1790	.262763	000	1860	.269513	000	1930	.285557	000	2000	.301100	000
81 025	1	.263009	024	1	.269746	023	1	.285782	022	1	.301322	022
33 050	2	.263238	048	2	.269980	047	2	.286007	045	2	.301544	043
86 076	3	.263468	073	3	.270213	070	3	.286232	067	3	.301766	065
37 101	4	.263697	097	4	.270446	093	4	.286456	089	4	.301988	087
89 126	5	.263926	121	5	.270679	116	5	.286681	112	5	.302210	109
41 151	6	.264155	145	6	.270912	140	6	.286905	134	6	.302432	144
92 176	7	.264384	170	7	.271144	163	7	.287130	157	7	.302654	166
44 202	8	.264613	194	8	.271377	186	8	.287354	179	8	.302876	173
96 227	9	.264842	218	9	.271609	210	9	.287578	202	9	.303098	195
46 000	1800	.265075	000	1870	.271842	000	1940	.287802	000	2010	.303320	000
97 025	1	.265309	024	1	.272074	023	1	.288025	022	1	.303542	022
48 050	2	.265542	048	2	.272306	046	2	.288249	045	2	.303764	043
99 075	3	.265775	072	3	.272538	070	3	.288473	067	3	.303986	065
49 100	4	.266008	096	4	.272770	093	4	.288696	089	4	.304208	087
99 125	5	.266241	120	5	.273001	116	5	.288920	112	5	.304430	109
50 150	6	.266474	144	6	.273233	140	6	.289143	134	6	.304652	144
90 175	7	.266707	168	7	.273464	162	7	.289366	156	7	.304874	166
50 200	8	.266939	192	8	.273696	186	8	.289589	178	8	.305096	173
90 225	9	.267172	216	9	.273927	209	9	.289812	201	9	.305318	194
49 000	1810	.267405	000	1880	.274158	000	1950	.290035	000	2020	.305540	000
99 025	1	.267638	024	1	.274390	023	1	.290257	022	1	.305762	022
49 050	2	.267871	048	2	.274622	046	2	.290480	044	2	.305984	043
97 075	3	.268104	072	3	.274854	069	3	.290702	067	3	.306206	065
46 100	4	.268337	096	4	.275086	092	4	.290925	089	4	.306428	087
36 124	5	.268570	120	5	.275318	115	5	.291147	111	5	.306650	109
44 149	6	.268803	144	6	.275550	139	6	.291369	133	6	.306872	144
93 174	7	.269036	167	7	.275782	161	7	.291591	155	7	.307094	166
11 199	8	.269269	191	8	.276014	184	8	.291813	178	8	.307316	173
90 223	9	.269501	215	9	.276246	207	9	.292035	200	9	.307538	194
38 000	1820	.269734	000	1890	.276478	000	1960	.292256	000	2030	.307760	000
96 025	1	.269967	024	1	.276710	023	1	.292478	022	1	.307982	022
34 050	2	.270199	048	2	.276942	046	2	.292700	044	2	.308204	043
82 074	3	.270432	071	3	.277174	069	3	.292922	066	3	.308426	065
90 099	4	.270664	095	4	.277406	092	4	.293144	088	4	.308648	087
77 124	5	.270897	119	5	.277638	115	5	.293366	110	5	.308870	109
24 149	6	.271129	143	6	.277870	138	6	.293588	132	6	.309092	144
72 174	7	.271362	167	7	.278102	161	7	.293810	154	7	.309314	166
19 198	8	.271594	191	8	.278334	183	8	.294032	176	8	.309536	173
96 222	9	.271827	214	9	.278566	206	9	.294254	199	9	.309758	194
13 000	1830	.272059	000	1900	.278798	000	1970	.294476	000	2040	.309980	000
50 025	1	.272292	024	1	.279030	023	1	.294698	022	1	.310202	022
06 049	2	.272524	047	2	.279262	045	2	.294920	044	2	.310424	043
52 074	3	.272757	071	3	.279494	068	3	.295142	066	3	.310646	065
99 098	4	.272989	095	4	.279726	091	4	.295364	088	4	.310868	087
45 123	5	.273222	118	5	.279958	114	5	.295586	110	5	.311090	109
91 148	6	.273454	142	6	.280190	137	6	.295808	132	6	.311312	144
36 173	7	.273687	166	7	.280422	160	7	.296030	154	7	.311534	166
82 197	8	.273919	190	8	.280654	182	8	.296252	176	8	.311756	173
28 221	9	.274152	213	9	.280886	205	9	.296474	198	9	.311978	194

(u)			Log. .311754 to .380030			No. 2050 to 2399.							
No.	Log	Part.	No.	Log	Part.	No.	Log.	Part.	No.	Log	Part.	No.	I
2050	.311754	000	2120	.328336	000	2190	.340444	000	2260	.354108	000	2330	.368336
1	.311966	021	1	.328541	020	1	.340642	020	1	.354301	019	1	.368539
2	.312177	042	2	.328746	041	2	.340840	040	2	.354493	038	2	.368731
3	.312389	063	3	.328950	061	3	.341039	059	3	.354685	058	3	.368923
4	.312600	084	4	.329154	082	4	.341237	079	4	.354878	077	4	.369111
5	.312812	106	5	.329359	102	5	.341434	099	5	.355068	096	5	.369303
6	.313023	127	6	.329563	123	6	.341632	119	6	.355260	115	6	.369488
7	.313234	148	7	.329767	143	7	.341830	139	7	.355451	134	7	.369673
8	.313445	169	8	.329972	164	8	.342028	158	8	.355643	154	8	.369858
9	.313656	190	9	.328176	184	9	.342225	178	9	.355834	173	9	.370043
2060	.313867	000	2130	.328380	000	2200	.342423	000	2270	.356026	000	2340	.370235
1	.314078	021	1	.328583	020	1	.342620	020	1	.356217	019	1	.370427
2	.314289	042	2	.328787	041	2	.342817	039	2	.356408	038	2	.370619
3	.314499	063	3	.328991	061	3	.343014	058	3	.356599	057	3	.370811
4	.314710	084	4	.329194	081	4	.343212	079	4	.356790	076	4	.371003
5	.314920	105	5	.329398	102	5	.343409	099	5	.356981	095	5	.371195
6	.315130	126	6	.329601	122	6	.343606	118	6	.357172	115	6	.371387
7	.315340	147	7	.329804	142	7	.343802	138	7	.357363	134	7	.371579
8	.315550	168	8	.330008	163	8	.343999	158	8	.357554	153	8	.371771
9	.315760	189	9	.330211	183	9	.344196	178	9	.357744	172	9	.371963
2070	.315970	000	2140	.330414	000	2210	.344392	000	2280	.357935	000	2350	.372151
1	.316180	021	1	.330617	020	1	.344589	020	1	.358125	019	1	.372343
2	.316390	042	2	.330819	040	2	.344786	039	2	.358316	038	2	.372535
3	.316600	063	3	.331022	061	3	.344981	058	3	.358506	057	3	.372727
4	.316809	084	4	.331225	081	4	.345178	078	4	.358696	076	4	.372919
5	.317018	105	5	.331427	101	5	.345374	098	5	.358888	095	5	.373111
6	.317227	126	6	.331630	121	6	.345570	118	6	.359078	114	6	.373303
7	.317436	147	7	.331832	141	7	.345766	137	7	.359266	133	7	.373495
8	.317645	168	8	.332034	162	8	.345962	157	8	.359456	152	8	.373687
9	.317854	189	9	.332236	182	9	.346157	176	9	.359646	171	9	.373879
2080	.318063	000	2150	.332438	000	2220	.346353	000	2290	.359835	000	2360	.374071
1	.318272	021	1	.332640	020	1	.346549	019	1	.360025	019	1	.374263
2	.318481	042	2	.332842	040	2	.346744	039	2	.360215	038	2	.374455
3	.318689	063	3	.333044	060	3	.346939	058	3	.360404	057	3	.374647
4	.318898	083	4	.333246	081	4	.347135	078	4	.360593	076	4	.374839
5	.319106	104	5	.333447	101	5	.347330	097	5	.360783	095	5	.375031
6	.319314	125	6	.333649	121	6	.347525	117	6	.360972	114	6	.375223
7	.319522	146	7	.333850	141	7	.347720	137	7	.361161	133	7	.375415
8	.319730	167	8	.334051	161	8	.347915	156	8	.361350	152	8	.375607
9	.319938	188	9	.334253	181	9	.348110	175	9	.361539	171	9	.375799
2090	.320146	000	2160	.334454	000	2230	.348306	000	2300	.361728	000	2370	.376003
1	.320354	021	1	.334655	020	1	.348500	019	1	.361917	019	1	.376195
2	.320562	041	2	.334856	040	2	.348694	039	2	.362105	038	2	.376387
3	.320769	062	3	.335058	060	3	.348889	058	3	.362294	056	3	.376579
4	.320977	083	4	.335257	080	4	.349083	078	4	.362482	075	4	.376771
5	.321184	104	5	.335458	100	5	.349277	097	5	.362671	094	5	.376963
6	.321391	125	6	.335658	120	6	.349472	117	6	.362859	113	6	.377155
7	.321598	145	7	.335859	140	7	.349666	137	7	.363048	132	7	.377347
8	.321805	166	8	.336059	160	8	.349860	156	8	.363236	151	8	.377539
9	.322012	187	9	.336260	180	9	.350054	175	9	.363424	170	9	.377731
2100	.322219	000	2170	.336460	000	2240	.350248	000	2310	.363612	000	2380	.377923
1	.322426	021	1	.336660	020	1	.350442	019	1	.363800	019	1	.378115
2	.322633	041	2	.336860	040	2	.350636	039	2	.363988	037	2	.378307
3	.322839	062	3	.337060	060	3	.350829	058	3	.364176	056	3	.378499
4	.323046	082	4	.337259	080	4	.351023	077	4	.364363	075	4	.378691
5	.323252	103	5	.337459	100	5	.351216	097	5	.364551	094	5	.378883
6	.323458	124	6	.337659	120	6	.351410	116	6	.364739	112	6	.379075
7	.323664	144	7	.337858	140	7	.351603	135	7	.364926	131	7	.379267
8	.323871	165	8	.338058	160	8	.351796	155	8	.365113	150	8	.379459
9	.324077	186	9	.338257	180	9	.351989	174	9	.365301	160	9	.379651
2110	.324282	000	2180	.338456	000	2250	.352182	000	2320	.365488	000	2390	.379843
1	.324488	021	1	.338656	020	1	.352375	019	1	.365675	019	1	.379843
2	.324694	041	2	.338855	040	2	.352568	038	2	.365862	037	2	.379843
3	.324899	062	3	.339054	060	3	.352761	058	3	.366049	056	3	.379843
4	.325105	082	4	.339253	080	4	.352954	077	4	.366236	075	4	.379843
5	.325310	103	5	.339451	100	5	.353146	096	5	.366423	093	5	.379843
6	.325516	123	6	.339650	119	6	.353339	115	6	.366610	112	6	.379843
7	.325721	144	7	.339849	139	7	.353532	134	7	.366796	131	7	.379843
8	.325926	164	8	.340047	159	8	.353724	154	8	.366983	150	8	.379843
9	.326131	185	9	.340246	179	9	.353916	173	9	.367169	168	9	.379843

Log. .380211 to .439175

No. 2400 to 2749.

(u.)

s.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.
211	000	2470	.392697	000	2540	.404834	000	2610	.416640	000	2680	.428135	000
302	018	1	.392873	018	1	.405005	017	1	.416807	017	1	.428297	016
573	036	2	.393048	035	2	.405175	034	2	.416973	033	2	.428459	032
754	055	3	.393224	053	3	.405346	051	3	.417139	050	3	.428621	048
934	073	4	.393400	070	4	.405517	068	4	.417306	066	4	.428782	065
115	091	5	.393575	088	5	.405688	085	5	.417472	083	5	.428944	081
296	109	6	.393751	106	6	.405858	102	6	.417638	100	6	.429106	097
476	127	7	.393926	123	7	.406029	119	7	.417804	116	7	.429268	113
656	145	8	.394101	141	8	.406199	136	8	.417970	133	8	.429429	129
837	163	9	.394276	158	9	.406370	153	9	.418135	149	9	.429591	145
017	000	2480	.394452	000	2550	.406540	000	2620	.418301	000	2690	.429752	000
197	018	1	.394627	017	1	.406710	017	1	.418467	017	1	.429914	016
377	036	2	.394802	035	2	.406881	034	2	.418633	033	2	.430075	032
557	054	3	.394977	053	3	.407051	051	3	.418798	050	3	.430236	048
737	072	4	.395152	070	4	.407221	068	4	.418964	066	4	.430398	065
917	090	5	.395326	087	5	.407391	085	5	.419129	083	5	.430559	081
097	108	6	.395501	104	6	.407561	102	6	.419295	099	6	.430720	097
277	126	7	.395676	122	7	.407731	119	7	.419460	116	7	.430881	113
456	144	8	.395850	139	8	.407900	136	8	.419625	132	8	.431042	129
636	162	9	.396025	157	9	.408070	153	9	.419791	149	9	.431203	145
815	000	2490	.396199	000	2560	.408240	000	2630	.419956	000	2700	.431364	000
995	018	1	.396374	017	1	.408410	017	1	.420121	016	1	.431525	016
174	036	2	.396548	035	2	.408579	034	2	.420286	033	2	.431685	032
353	054	3	.396722	053	3	.408749	051	3	.420451	049	3	.431846	048
533	072	4	.396896	070	4	.408918	068	4	.420616	066	4	.432007	064
712	090	5	.397070	087	5	.409087	085	5	.420781	082	5	.432167	080
891	108	6	.397245	104	6	.409257	102	6	.420945	099	6	.432328	096
070	126	7	.397418	122	7	.409426	119	7	.421110	115	7	.432488	112
249	144	8	.397592	139	8	.409595	136	8	.421275	132	8	.432649	128
427	162	9	.397766	157	9	.409764	153	9	.421439	148	9	.432809	144
606	000	2500	.397940	000	2570	.409933	000	2640	.421604	000	2710	.432969	000
785	018	1	.398114	017	1	.410102	017	1	.421768	016	1	.433129	016
964	035	2	.398287	035	2	.410271	034	2	.421933	033	2	.433290	032
142	053	3	.398461	053	3	.410440	050	3	.422097	049	3	.433450	048
321	071	4	.398634	069	4	.410608	067	4	.422261	066	4	.433610	064
500	089	5	.398808	087	5	.410777	084	5	.422426	082	5	.433770	080
679	107	6	.398981	104	6	.410946	101	6	.422590	099	6	.433930	096
858	125	7	.399154	121	7	.411114	118	7	.422754	115	7	.434090	112
037	143	8	.399327	138	8	.411283	135	8	.422918	132	8	.434249	128
216	161	9	.399501	156	9	.411451	152	9	.423082	148	9	.434409	144
395	000	2510	.399674	000	2580	.411620	000	2650	.423246	000	2720	.434569	000
574	018	1	.399847	017	1	.411788	017	1	.423410	016	1	.434728	016
753	036	2	.400020	035	2	.411956	034	2	.423573	033	2	.434888	032
932	053	3	.400192	053	3	.412124	050	3	.423737	049	3	.435048	048
111	071	4	.400365	069	4	.412292	067	4	.423901	065	4	.435207	064
290	089	5	.400538	087	5	.412460	084	5	.424064	081	5	.435366	080
469	107	6	.400711	104	6	.412628	101	6	.424228	098	6	.435526	096
648	125	7	.400883	121	7	.412796	118	7	.424392	114	7	.435685	112
827	142	8	.401056	138	8	.412964	135	8	.424555	131	8	.435844	128
006	160	9	.401228	156	9	.413132	152	9	.424718	147	9	.436003	144
185	000	2520	.401400	000	2590	.413300	000	2660	.424882	000	2730	.436163	000
364	018	1	.401573	017	1	.413467	017	1	.425045	016	1	.436322	016
543	036	2	.401745	034	2	.413635	033	2	.425208	033	2	.436481	032
722	053	3	.401917	052	3	.413802	050	3	.425371	049	3	.436640	047
901	071	4	.402089	069	4	.413970	067	4	.425534	065	4	.436798	063
080	089	5	.402261	086	5	.414137	084	5	.425697	081	5	.436957	079
259	107	6	.402433	103	6	.414305	101	6	.425860	098	6	.437116	095
438	125	7	.402605	120	7	.414472	117	7	.426023	114	7	.437275	111
617	142	8	.402777	138	8	.414639	134	8	.426186	130	8	.437433	127
796	160	9	.402949	155	9	.414806	151	9	.426349	147	9	.437592	143
975	000	2530	.403120	000	2600	.414973	000	2670	.426511	000	2740	.437751	000
154	018	1	.403292	017	1	.415140	017	1	.426674	016	1	.437909	016
333	035	2	.403464	034	2	.415307	033	2	.426836	033	2	.438067	032
512	053	3	.403635	052	3	.415474	050	3	.426999	049	3	.438226	047
691	070	4	.403807	069	4	.415641	067	4	.427161	065	4	.438384	063
870	088	5	.403978	086	5	.415808	084	5	.427324	081	5	.438542	079
049	106	6	.404149	103	6	.415974	101	6	.427486	098	6	.438700	095
228	123	7	.404320	120	7	.416141	117	7	.427648	114	7	.438859	111
407	141	8	.404492	137	8	.416308	134	8	.427811	130	8	.439017	127
586	158	9	.404663	154	9	.416474	150	9	.427973	147	9	.439175	143

(u.)			Log. .439333 to .491223			No. 2750 to 3099.								
No.	Log.	Part	No.	Log.	Part	No.	Log.	Part	No.	Log.	Part	No.	Log.	Part
2750	.439333	000	2820	.450249	000	2890	.460888	000	2960	.471292	000	3030	.481292	000
1	.439491	016	1	.450403	016	1	.461048	015	1	.471438	015	1	.481438	015
2	.439648	032	2	.450557	031	2	.461198	030	2	.471585	029	2	.481585	029
3	.439806	047	3	.450711	046	3	.461348	045	3	.471732	044	3	.481732	044
4	.439964	063	4	.450865	062	4	.461498	060	4	.471878	059	4	.481878	059
5	.440122	079	5	.451018	077	5	.461649	075	5	.472025	073	5	.482025	073
6	.440279	095	6	.451172	092	6	.461799	090	6	.472171	088	6	.482171	088
7	.440437	111	7	.451326	108	7	.461948	105	7	.472317	102	7	.482317	102
8	.440594	126	8	.451479	125	8	.462098	120	8	.472464	117	8	.482464	117
9	.440752	142	9	.451633	139	9	.462248	135	9	.472610	132	9	.482610	132
2760	.440909	000	2830	.451788	000	2900	.462398	000	2970	.472756	000	3040	.482756	000
1	.441066	016	1	.451940	015	1	.462548	015	1	.472903	015	1	.482903	015
2	.441224	032	2	.452093	031	2	.462697	030	2	.473049	029	2	.483049	029
3	.441381	047	3	.452247	046	3	.462847	045	3	.473195	044	3	.483195	044
4	.441538	063	4	.452400	061	4	.462997	060	4	.473341	059	4	.483341	059
5	.441695	078	5	.452553	077	5	.463146	075	5	.473487	073	5	.483487	073
6	.441852	094	6	.452706	092	6	.463296	090	6	.473633	088	6	.483633	088
7	.442009	110	7	.452859	107	7	.463445	105	7	.473779	102	7	.483779	102
8	.442166	126	8	.453012	123	8	.463594	120	8	.473925	117	8	.483925	117
9	.442323	141	9	.453165	139	9	.463744	135	9	.474070	132	9	.484070	132
2770	.442480	000	2840	.453318	000	2910	.463893	000	2980	.474216	000	3050	.484216	000
1	.442636	016	1	.453471	015	1	.464042	015	1	.474362	015	1	.484362	015
2	.442793	031	2	.453624	031	2	.464191	030	2	.474508	029	2	.484508	029
3	.442950	047	3	.453777	046	3	.464340	045	3	.474653	044	3	.484653	044
4	.443106	063	4	.453930	061	4	.464489	060	4	.474799	058	4	.484799	058
5	.443263	078	5	.454082	077	5	.464638	075	5	.474944	073	5	.484944	073
6	.443419	094	6	.454235	092	6	.464787	090	6	.475090	088	6	.485090	088
7	.443576	110	7	.454387	107	7	.464936	105	7	.475235	102	7	.485235	102
8	.443732	126	8	.454540	123	8	.465085	120	8	.475381	117	8	.485381	117
9	.443888	141	9	.454692	139	9	.465234	135	9	.475526	132	9	.485526	132
2780	.444045	000	2850	.454845	000	2920	.465383	000	2990	.475671	000	3060	.485671	000
1	.444201	016	1	.454997	015	1	.465532	015	1	.475818	015	1	.485818	015
2	.444357	031	2	.455149	030	2	.465680	030	2	.475962	029	2	.485962	029
3	.444513	047	3	.455302	046	3	.465829	044	3	.476107	043	3	.486107	043
4	.444669	063	4	.455454	061	4	.465977	059	4	.476252	058	4	.486252	058
5	.444825	078	5	.455606	076	5	.466126	074	5	.476397	072	5	.486397	072
6	.444981	094	6	.455758	091	6	.466274	089	6	.476542	087	6	.486542	087
7	.445137	109	7	.455910	106	7	.466423	104	7	.476687	101	7	.486687	101
8	.445293	125	8	.456062	122	8	.466571	118	8	.476832	116	8	.486832	116
9	.445448	140	9	.456214	137	9	.466719	133	9	.476976	130	9	.486976	130
2790	.445604	000	2860	.456366	000	2930	.466868	000	3000	.477121	000	3070	.487121	000
1	.445760	016	1	.456518	015	1	.467016	015	1	.477266	014	1	.487266	014
2	.445915	031	2	.456670	030	2	.467164	030	2	.477411	029	2	.487411	029
3	.446071	047	3	.456821	046	3	.467312	044	3	.477555	043	3	.487555	043
4	.446226	063	4	.456973	061	4	.467460	059	4	.477700	058	4	.487700	058
5	.446382	078	5	.457125	076	5	.467608	074	5	.477844	072	5	.487844	072
6	.446537	094	6	.457276	091	6	.467756	089	6	.477989	087	6	.487989	087
7	.446692	109	7	.457428	106	7	.467904	104	7	.478133	101	7	.488133	101
8	.446848	125	8	.457579	122	8	.468052	118	8	.478278	116	8	.488278	116
9	.447003	140	9	.457730	137	9	.468200	133	9	.478422	130	9	.488422	130
2800	.447158	000	2870	.457882	000	2940	.468347	000	3010	.478566	000	3080	.488566	000
1	.447313	015	1	.458033	015	1	.468495	015	1	.478711	014	1	.488711	014
2	.447468	031	2	.458184	030	2	.468643	030	2	.478855	029	2	.488855	029
3	.447623	047	3	.458336	045	3	.468790	044	3	.478999	043	3	.488999	043
4	.447778	063	4	.458487	061	4	.468938	059	4	.479143	058	4	.489143	058
5	.447933	077	5	.458638	076	5	.469085	074	5	.479287	072	5	.489287	072
6	.448088	093	6	.458789	091	6	.469233	089	6	.479431	086	6	.489431	086
7	.448242	108	7	.458940	106	7	.469380	104	7	.479575	101	7	.489575	101
8	.448397	124	8	.459091	121	8	.469527	118	8	.479719	115	8	.489719	115
9	.448552	139	9	.459242	136	9	.469675	133	9	.479863	130	9	.489863	130
2810	.448706	000	2880	.459392	000	2950	.469822	000	3020	.480007	000	3090	.480007	000
1	.448861	015	1	.459543	015	1	.469969	015	1	.480151	014	1	.480151	014
2	.449016	031	2	.459694	030	2	.470116	029	2	.480294	029	2	.480294	029
3	.449170	046	3	.459845	045	3	.470263	044	3	.480438	043	3	.480438	043
4	.449324	062	4	.459995	061	4	.470410	059	4	.480582	058	4	.480582	058
5	.449478	077	5	.460146	076	5	.470557	074	5	.480725	072	5	.480725	072
6	.449632	092	6	.460296	091	6	.470704	088	6	.480869	086	6	.480869	086
7	.449787	108	7	.460447	106	7	.470851	103	7	.481012	101	7	.481012	101
8	.449941	123	8	.460597	121	8	.470998	118	8	.481156	115	8	.481156	115
9	.450095	139	9	.460747	136	9	.471145	132	9	.481299	130	9	.481299	130

Log. .491862 to .537693

No. 3100 to 3149.

(u.)

Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.
000	3170	.501059	000	3240	.510545	000	3310	.519828	000	3380	.528917	000
014	1	.501196	014	1	.510679	013	1	.519859	013	1	.529045	013
028	2	.501333	027	2	.510813	027	2	.520000	026	2	.529174	026
042	3	.501470	041	3	.510947	040	3	.520221	039	3	.529302	038
056	4	.501607	055	4	.511081	054	4	.520352	052	4	.529430	051
070	5	.501744	068	5	.511215	067	5	.520483	065	5	.529559	064
084	6	.501880	082	6	.511348	080	6	.520614	079	6	.529687	077
098	7	.502017	096	7	.511482	094	7	.520745	092	7	.529816	090
112	8	.502154	110	8	.511616	107	8	.520876	105	8	.529943	103
126	9	.502290	123	9	.511750	121	9	.521007	118	9	.530072	116
000	3180	.502427	000	3250	.511883	000	3320	.521138	000	3390	.530200	000
014	1	.502564	014	1	.512017	013	1	.521269	013	1	.530328	013
028	2	.502700	027	2	.512150	027	2	.521400	026	2	.530456	026
042	3	.502837	041	3	.512284	040	3	.521530	039	3	.530584	039
056	4	.502973	054	4	.512417	053	4	.521661	052	4	.530712	051
070	5	.503109	068	5	.512551	067	5	.521792	065	5	.530840	064
084	6	.503246	082	6	.512684	080	6	.521922	078	6	.530968	077
098	7	.503382	095	7	.512818	083	7	.522053	097	7	.531095	090
112	8	.503518	109	8	.512951	107	8	.522183	111	8	.531223	109
126	9	.503654	123	9	.513084	120	9	.522314	117	9	.531351	116
000	3190	.503791	000	3260	.513218	000	3330	.522444	000	3400	.531479	000
014	1	.503927	014	1	.513351	013	1	.522575	111	1	.531607	013
028	2	.504063	027	2	.513484	027	2	.522705	026	2	.531734	025
041	3	.504199	041	3	.513617	040	3	.522835	039	3	.531862	038
056	4	.504335	054	4	.513750	053	4	.522966	052	4	.531990	061
069	5	.504471	068	5	.513883	066	5	.523096	110	5	.532117	063
083	6	.504607	082	6	.514016	080	6	.523226	078	6	.532245	076
097	7	.504743	085	7	.514149	093	7	.523356	097	7	.532373	089
111	8	.504878	109	8	.514282	106	8	.523486	104	8	.532500	102
125	9	.505014	122	9	.514415	120	9	.523616	117	9	.532627	114
000	3200	.505150	000	3270	.514548	000	3340	.523746	000	3410	.532754	000
014	1	.505286	014	1	.514680	013	1	.523876	111	1	.532882	013
028	2	.505421	027	2	.514813	027	2	.524006	026	2	.533010	025
041	3	.505557	041	3	.514946	040	3	.524136	039	3	.533138	038
056	4	.505692	054	4	.515079	053	4	.524266	052	4	.533263	051
069	5	.505828	068	5	.515211	066	5	.524396	065	5	.533391	063
083	6	.505963	082	6	.515344	080	6	.524526	078	6	.533518	076
097	7	.506099	085	7	.515476	093	7	.524656	091	7	.533646	089
111	8	.506234	109	8	.515609	111	8	.524785	104	8	.533772	102
125	9	.506370	122	9	.515741	120	9	.524915	117	9	.533899	111
000	3210	.506505	000	3280	.515874	000	3350	.525045	111	3420	.534026	000
014	1	.506640	013	1	.516006	013	1	.525174	013	1	.534153	013
028	2	.506775	027	2	.516139	026	2	.525304	026	2	.534280	025
041	3	.506911	040	3	.516271	040	3	.525434	039	3	.534407	038
056	4	.507046	054	4	.516403	053	4	.525563	052	4	.534534	051
069	5	.507181	067	5	.516535	111	5	.525692	065	5	.534661	063
083	6	.507316	081	6	.516668	079	6	.525822	078	6	.534787	076
097	7	.507451	094	7	.516800	092	7	.525951	091	7	.534914	089
110	8	.507586	108	8	.516932	111	8	.526081	104	8	.535041	102
124	9	.507721	121	9	.517064	119	9	.526210	117	9	.535167	114
000	3220	.507856	000	3290	.517196	000	3360	.526339	000	3430	.535294	000
014	1	.507991	013	1	.517328	013	1	.526468	013	1	.535421	013
028	2	.508125	027	2	.517460	026	2	.526598	026	2	.535547	025
041	3	.508260	040	3	.517592	040	3	.526727	039	3	.535674	038
055	4	.508395	054	4	.517724	053	4	.526856	052	4	.535800	051
069	5	.508530	067	5	.517855	066	5	.526985	065	5	.535927	063
083	6	.508664	081	6	.517987	079	6	.527114	078	6	.536053	076
097	7	.508799	094	7	.518119	092	7	.527243	091	7	.536179	089
110	8	.508933	108	8	.518251	106	8	.527372	104	8	.536306	101
124	9	.509068	121	9	.518382	119	9	.527501	117	9	.536432	114
000	3230	.509203	000	3300	.518514	000	3370	.527630	000	3440	.536559	000
014	1	.509337	013	1	.518645	013	1	.527759	013	1	.536685	013
027	2	.509471	027	2	.518777	026	2	.527888	026	2	.536811	025
041	3	.509606	040	3	.518909	039	3	.528016	038	3	.536937	038
055	4	.509740	054	4	.519040	052	4	.528145	051	4	.537063	050
068	5	.509874	067	5	.519171	066	5	.528274	064	5	.537189	063
082	6	.510008	081	6	.519303	079	6	.528402	077	6	.537315	076
096	7	.510143	094	7	.519434	092	7	.528531	090	7	.537441	089
110	8	.510277	108	8	.519565	106	8	.528660	103	8	.537567	101
123	9	.510411	121	9	.519697	118	9	.528788	116	9	.537693	114

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Log. .537819 to .579669

No. 3450 to 3799.

No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.
3450	.537819	000	3520	.546543	000	3590	.555215	012	3660	.563600	000	3730	.571	
1	.537945	013	1	.546666	012	1	.555336	024	1	.563718	024	1	.571	
2	.538071	025	2	.546789	025	2	.555457	036	2	.563835	036	2	.571	
3	.538197	038	3	.546913	037	3	.555578	048	3	.563955	048	3	.571	
4	.538322	050	4	.547036	049	4	.555699	060	4	.564074	060	4	.571	
5	.538448	063	5	.547159	062	5	.555820	072	5	.564192	071	5	.571	
6	.538574	076	6	.547282	074	6	.555940	084	6	.564311	083	6	.571	
7	.538699	088	7	.547405	086	7	.556061		7	.564429	095	7	.571	
8	.538825	101	8	.547529	099	8	.556182	108	8	.564548	107	8	.571	
9	.538951	114	9	.547652	111	9	.556302	000	9	.564666	000	9	.571	
3460	.539076	000	3530	.547775	000	3600	.556423	012	3670	.564784	012	3740	.571	
1	.539202	013	1	.547898	012	1	.556544	024	1	.564903	024	1	.571	
2	.539327	025	2	.548021	025	2	.556664	036	2	.565021	036	2	.571	
3	.539452	038	3	.548144	037	3	.556785	048	3	.565139	047	3	.571	
4	.539578	050	4	.548268	049	4	.556905	060	4	.565257	059	4	.571	
5	.539703	063	5	.548393	061	5	.557026	072	5	.565375	071	5	.571	
6	.539829	075	6	.548512	074	6	.557146	084	6	.565494	083	6	.571	
7	.539954	088	7	.548635	076	7	.557266	096	7	.565612	095	7	.571	
8	.540079	100	8	.548758	098	8	.557387	108	8	.565730	107	8	.571	
9	.540204	113	9	.548881	111	9	.557507		9	.565848	000	9	.571	
3470	.540329	000	3540	.549003	000	3610	.557627	012		.565966	012		.571	
1	.540455	012	1	.549126	012	1	.557748	024	1	.566084	024	1	.571	
2	.540580	025	2	.549249	025	2	.557868	036	2	.566202	035	2	.571	
3	.540705	037	3	.549371	037	3	.557988	048	3	.566320	047	3	.571	
4	.540830	050	4	.549494	049	4	.558108	060	4	.566437		4	.571	
5	.540955	063	5	.549616	061	5	.558228	072	5	.566555	071	5	.571	
6	.541080	075	6	.549739	074	6	.558348	084	6	.566673	083	6	.571	
7	.541205	087	7	.549861	086	7	.558469	096	7	.566791	094	7	.571	
8	.541330	100	8	.549984	098	8	.558589		8	.566909		8	.571	
9	.541454	112	9	.550106	111	9	.558709	000	9	.567026	000	9	.571	
3480	.541579	000	3550	.550228	000	3620	.558828	012	3690	.567144	012	3760	.571	
1	.541704	012	1	.550351	012	1	.558948		1	.567262	024	1	.571	
2	.541829	025	2	.550473	024	2	.559068	036	2	.567379	035	2	.571	
3	.541953	037	3	.550595	037	3	.559188	048	3	.567497	047	3	.571	
4	.542078	050	4	.550717	049	4	.559308	060	4	.567614	059	4	.571	
5	.542203	063	5	.550840	061	5	.559428	072	5	.567732	071	5	.571	
6	.542327	075	6	.550962	073	6	.559548	084	6	.567849	083	6	.571	
7	.542452	087	7	.551084	086	7	.559667	096	7	.567967	094	7	.571	
8	.542576	100	8	.551206	098	8	.559787	108	8	.568084	100	8	.571	
9	.542701	112	9	.551328	110	9	.559907	000	9	.568202	000	9	.571	
3490	.542825	000	3560	.551450	000		.560026	012	3700	.568319	012	3770	.571	
1	.542950	012	1	.551572	012	1	.560146	024	1	.568436	023	1	.571	
2	.543074	025	2	.551694	024	2	.560265	036	2	.568554	035	2	.571	
3	.543199	037	3	.551816	037	3	.560385	048	3	.568671	047	3	.571	
4	.543323	050	4	.551938	049	4	.560504	060	4	.568788	058	4	.571	
5	.543447	063	5	.552059	061	5	.560624	072	5	.568905	070	5	.571	
6	.543571	075	6	.552181	073	6	.560743	084	6	.569023	082	6	.571	
7	.543696	087	7	.552303	086	7	.560863	096	7	.569140	094	7	.571	
8	.543820	100	8	.552425	098	8	.560983	108	8	.569257	106	8	.571	
9	.543944	112	9	.552546	110	9	.561101	000	9	.569374	000	9	.571	
3500	.544068	000	3570	.552668	000	3640	.561221	012	3710	.569491	012	3780	.571	
1	.544192	012	1	.552790	012	1	.561340	024	1	.569608	023	1	.571	
2	.544316	025	2	.552911	024	2	.561459	036	2	.569725	035	2	.571	
3	.544440	037	3	.553033	036	3	.561578	048	3	.569842	047	3	.571	
4	.544564	050	4	.553154	049	4	.561697	060	4	.569959	058	4	.571	
5	.544688	063	5	.553276	061	5	.561817	072	5	.570076	070	5	.571	
6	.544812	074	6	.553397	073	6	.561936	084	6	.570193	082	6	.571	
7	.544936	087	7	.553519	085	7	.562055	096	7	.570309		7	.571	
8	.545060	099	8	.553640	097	8	.562174	108	8	.570426	106	8	.571	
9	.545183	112	9	.553762	100	9	.562293	000	9	.570543	000	9	.571	
3510	.545307	000	3580	.553883	000	3650	.562412	012	3720	.570660	012	3790	.571	
1	.545431	012	1	.554004	012	1	.562531	024	1	.570776	023	1	.571	
2	.545554	025	2	.554126	024	2	.562650	036	2	.570893	035	2	.571	
3	.545678	037	3	.554247	036	3	.562768	048	3	.571010	047	3	.571	
4	.545802	049	4	.554368	049	4	.562887	060	4	.571126	058	4	.571	
5	.545925	063	5	.554489	061	5	.563006	071	5	.571243	070	5	.571	
6	.546049	074	6	.554610	073	6	.563125	083	6	.571359	081	6	.571	
7	.546172	086	7	.554731	085	7	.563244	095	7	.571476	093	7	.571	
8	.546296	099	8	.554852	097	8	.563362	107	8	.571592	105	8	.571	
9	.546419	111	9	.554973	109	9			9			9	.571	

Log. .579784 to .617943

No. 3800 to 4149

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Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.
000	3870	.587711	000	3940	.595496	000	4010	.603144	000	4080	.610600	000
011	1	.587823	011	1	.595606	011	1	.603253	011	1	.610767	011
023	2	.587935	022	2	.595717	022	2	.603361	022	2	.610873	021
034	3	.588047	034	3	.595827	033	3	.603469	033	3	.610979	032
046	4	.588160	045	4	.595937	044	4	.603577	043	4	.611086	042
057	5	.588272	056	5	.596047	055	5	.603685	054	5	.611192	053
068	6	.588384	067	6	.596157	066	6	.603794	065	6	.611298	064
080	7	.588496	078	7	.596267	077	7	.603902	076	7	.611405	074
091	8	.588608	090	8	.596377	088	8	.604010	087	8	.611511	085
103	9	.588720	101	9	.596487	099	9	.604118	098	9	.611617	095
000	3880	.588832	000	3950	.596597	000	4020	.604226	000	4090	.611723	000
011	1	.588944	011	1	.596707	011	1	.604334	011	1	.611829	011
023	2	.589055	022	2	.596817	022	2	.604442	022	2	.611936	021
034	3	.589167	033	3	.596927	033	3	.604550	032	3	.612042	032
046	4	.589279	044	4	.597037	044	4	.604658	043	4	.612148	042
057	5	.589391	056	5	.597146	055	5	.604766	054	5	.612254	053
068	6	.589503	067	6	.597256	066	6	.604874	065	6	.612360	064
080	7	.589614	078	7	.597366	077	7	.604982	076	7	.612466	074
091	8	.589726	089	8	.597476	088	8	.605089	086	8	.612572	085
103	9	.589838	100	9	.597585	099	9	.605197	097	9	.612678	095
000	3890	.589950	000	3960	.597695	000	4030	.605305	000	4100	.612784	000
011	1	.590061	011	1	.597805	011	1	.605413	011	1	.612890	011
023	2	.590173	022	2	.597914	022	2	.605520	022	2	.612996	021
034	3	.590284	033	3	.598024	033	3	.605628	032	3	.613101	032
045	4	.590396	044	4	.598134	044	4	.605736	043	4	.613207	042
056	5	.590507	056	5	.598243	055	5	.605843	054	5	.613313	053
068	6	.590619	067	6	.598353	066	6	.605951	065	6	.613419	064
079	7	.590730	078	7	.598462	077	7	.606059	076	7	.613525	074
090	8	.590842	089	8	.598572	088	8	.606166	086	8	.613630	085
102	9	.590953	100	9	.598681	099	9	.606274	097	9	.613736	095
000	3900	.591065	000	3970	.598790	000	4040	.606381	000	4110	.613842	000
011	1	.591176	011	1	.598900	011	1	.606489	011	1	.613947	011
023	2	.591287	022	2	.599009	022	2	.606596	021	2	.614053	021
034	3	.591399	033	3	.599119	033	3	.606704	032	3	.614159	032
045	4	.591510	044	4	.599228	044	4	.606811	043	4	.614264	042
056	5	.591621	056	5	.599337	055	5	.606918	054	5	.614370	053
068	6	.591732	067	6	.599446	066	6	.607026	064	6	.614475	063
079	7	.591843	078	7	.599556	077	7	.607133	075	7	.614581	074
090	8	.591955	089	8	.599665	088	8	.607240	086	8	.614686	084
102	9	.592066	100	9	.599774	099	9	.607348	096	9	.614792	095
000	3910	.592177	000	3980	.599883	000	4050	.607455	000	4120	.614897	000
011	1	.592288	011	1	.599992	011	1	.607562	011	1	.615003	011
023	2	.592399	022	2	.600101	022	2	.607669	021	2	.615108	021
034	3	.592510	033	3	.600210	033	3	.607777	032	3	.615213	031
045	4	.592621	044	4	.600319	044	4	.607884	043	4	.615319	042
056	5	.592732	055	5	.600428	054	5	.607991	054	5	.615424	052
068	6	.592843	067	6	.600537	065	6	.608098	064	6	.615529	063
079	7	.592954	078	7	.600646	076	7	.608205	075	7	.615634	073
090	8	.593064	089	8	.600755	087	8	.608312	086	8	.615740	084
102	9	.593175	100	9	.600864	098	9	.608419	096	9	.615845	095
000	3920	.593286	000	3990	.600973	000	4060	.608526	000	4130	.615950	000
011	1	.593397	011	1	.601082	011	1	.608633	011	1	.616055	011
022	2	.593508	022	2	.601190	022	2	.608740	021	2	.616160	021
034	3	.593618	033	3	.601299	033	3	.608847	032	3	.616265	031
045	4	.593729	044	4	.601408	044	4	.608954	043	4	.616370	042
056	5	.593840	055	5	.601517	054	5	.609060	053	5	.616475	052
067	6	.593950	066	6	.601625	065	6	.609167	064	6	.616580	063
078	7	.594061	077	7	.601734	076	7	.609274	075	7	.616685	073
090	8	.594171	088	8	.601843	087	8	.609381	086	8	.616790	084
101	9	.594282	099	9	.601951	098	9	.609488	096	9	.616895	095
000	3930	.594393	000	4000	.602060	000	4070	.609594	000	4140	.617000	000
011	1	.594503	011	1	.602169	011	1	.609701	011	1	.617105	010
022	2	.594613	022	2	.602277	022	2	.609808	021	2	.617210	021
034	3	.594724	033	3	.602386	033	3	.609914	032	3	.617315	031
045	4	.594834	044	4	.602494	043	4	.610021	043	4	.617420	042
056	5	.594945	055	5	.602602	054	5	.610128	053	5	.617524	052
067	6	.595055	066	6	.602711	065	6	.610234	064	6	.617629	063
078	7	.595165	077	7	.602819	076	7	.610341	075	7	.617734	073
090	8	.595276	088	8	.602928	087	8	.610447	086	8	.617839	084
101	9	.595386	099	9	.603036	098	9	.610554	096	9	.617943	094

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Log. .618048 to .653116

No. 4150 to 4499.

No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.
4160	.618048	000	4220	.625312	000	4290	.632457	000	4360	.639486	000	4430	.646440
1	.618153	010	1	.625416	010	1	.632558	010	1	.639586	010	1	.646540
2	.618257	021	2	.625518	021	2	.632660	020	2	.639686	020	2	.646640
3	.618362	031	3	.625621	031	3	.632761	030	3	.639785	030	3	.646740
4	.618466	042	4	.625724	041	4	.632862	041	4	.639885	040	4	.646775
5	.618571	052	5	.625827	051	5	.632963	051	5	.639984	050	5	.646880
6	.618675	062	6	.625929	062	6	.633064	061	6	.640084	060	6	.646980
7	.618780	073	7	.626032	072	7	.633165	071	7	.640184	070	7	.647080
8	.618884	083	8	.626135	082	8	.633266	081	8	.640283	080	8	.647180
9	.618989	094	9	.626238	093	9	.633367	091	9	.640382	090	9	.647280
4160	.619093	000	4230	.626340	000	4300	.633468	000	4370	.640481	000	4440	.647380
1	.619198	010	1	.626443	010	1	.633569	010	1	.640581	010	1	.647480
2	.619302	021	2	.626546	021	2	.633670	020	2	.640680	020	2	.647575
3	.619406	031	3	.626648	031	3	.633771	030	3	.640779	030	3	.647670
4	.619511	042	4	.626751	041	4	.633872	040	4	.640879	040	4	.647770
5	.619615	052	5	.626853	051	5	.633973	050	5	.640978	050	5	.647875
6	.619719	062	6	.626956	062	6	.634074	061	6	.641077	060	6	.647970
7	.619823	073	7	.627058	072	7	.634175	071	7	.641176	070	7	.648065
8	.619928	083	8	.627161	082	8	.634276	081	8	.641276	080	8	.648165
9	.620032	094	9	.627263	093	9	.634376	091	9	.641375	090	9	.648260
4170	.620136	000	4240	.627366	000	4310	.634477	000	4380	.641474	000	4450	.648360
1	.620240	010	1	.627468	010	1	.634578	010	1	.641573	010	1	.648465
2	.620344	021	2	.627571	020	2	.634679	020	2	.641672	020	2	.648565
3	.620448	031	3	.627673	031	3	.634779	030	3	.641771	030	3	.648665
4	.620552	042	4	.627775	041	4	.634880	040	4	.641870	040	4	.648765
5	.620656	052	5	.627878	051	5	.634981	050	5	.641970	050	5	.648865
6	.620760	062	6	.627980	061	6	.635081	061	6	.642069	060	6	.648965
7	.620864	073	7	.628082	072	7	.635182	071	7	.642168	070	7	.649065
8	.620968	083	8	.628184	082	8	.635283	081	8	.642267	080	8	.649165
9	.621072	094	9	.628287	092	9	.635383	091	9	.642366	090	9	.649265
4180	.621176	000	4250	.628389	000	4320	.635484	000	4390	.642464	000	4460	.649365
1	.621280	010	1	.628491	010	1	.635584	010	1	.642563	010	1	.649465
2	.621384	021	2	.628593	020	2	.635685	020	2	.642662	020	2	.649565
3	.621488	031	3	.628695	031	3	.635785	030	3	.642761	030	3	.649665
4	.621592	042	4	.628797	041	4	.635886	040	4	.642860	040	4	.649765
5	.621695	052	5	.628899	051	5	.635986	050	5	.642959	050	5	.649865
6	.621799	062	6	.629002	061	6	.636086	060	6	.643058	060	6	.649965
7	.621903	073	7	.629104	072	7	.636187	070	7	.643156	070	7	.650065
8	.622007	083	8	.629206	082	8	.636287	080	8	.643255	080	8	.650165
9	.622110	094	9	.629308	092	9	.636388	090	9	.643354	090	9	.650265
4190	.622214	000	4260	.629410	000	4330	.636488	000	4400	.643453	000	4470	.650365
1	.622318	010	1	.629511	010	1	.636588	010	1	.643551	010	1	.650465
2	.622421	021	2	.629613	020	2	.636688	020	2	.643650	020	2	.650565
3	.622525	031	3	.629715	030	3	.636789	030	3	.643749	030	3	.650665
4	.622628	041	4	.629817	041	4	.636889	040	4	.643847	040	4	.650765
5	.622732	052	5	.629919	051	5	.636989	050	5	.643946	050	5	.650865
6	.622835	062	6	.630021	061	6	.637089	060	6	.644044	060	6	.650965
7	.622939	072	7	.630123	071	7	.637188	070	7	.644143	070	7	.651065
8	.623042	083	8	.630224	081	8	.637289	080	8	.644242	080	8	.651165
9	.623146	093	9	.630326	091	9	.637390	090	9	.644340	090	9	.651265
4200	.623249	000	4270	.630428	000	4340	.637490	000	4410	.644439	000	4480	.651365
1	.623353	010	1	.630530	010	1	.637590	010	1	.644537	010	1	.651465
2	.623456	021	2	.630631	020	2	.637690	020	2	.644635	020	2	.651565
3	.623559	031	3	.630733	030	3	.637790	030	3	.644734	030	3	.651665
4	.623663	041	4	.630834	041	4	.637890	040	4	.644832	040	4	.651765
5	.623766	052	5	.630936	051	5	.637990	050	5	.644931	050	5	.651865
6	.623869	062	6	.631038	061	6	.638090	060	6	.645029	060	6	.651965
7	.623972	072	7	.631139	071	7	.638190	070	7	.645127	070	7	.652065
8	.624076	083	8	.631241	081	8	.638289	080	8	.645226	080	8	.652165
9	.624179	093	9	.631342	091	9	.638389	090	9	.645324	090	9	.652265
4210	.624282	000	4280	.631444	000	4350	.638489	000	4420	.645422	000	4490	.652365
1	.624385	010	1	.631545	010	1	.638589	010	1	.645520	010	1	.652465
2	.624488	021	2	.631647	020	2	.638689	020	2	.645619	020	2	.652565
3	.624591	031	3	.631748	030	3	.638789	030	3	.645717	030	3	.652665
4	.624694	041	4	.631849	041	4	.638888	040	4	.645815	040	4	.652765
5	.624798	051	5	.631951	051	5	.638988	050	5	.645913	050	5	.652865
6	.624901	062	6	.632052	061	6	.639088	060	6	.646011	060	6	.652965
7	.625004	072	7	.632153	071	7	.639188	070	7	.646109	070	7	.653065
8	.625107	082	8	.632255	081	8	.639287	080	8	.646208	080	8	.653165
9	.625209	093	9	.632356	091	9	.639387	090	9	.646306	090	9	.653265

Log. .653212 to .685652 No. 4500 to 4849.

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Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.
.3213	000	4570	.659916	000	4640	.666518	000	4710	.673021	000	4780	.679428	000
.3309	010	1	.660111	010	1	.666612	009	1	.673113	009	1	.679519	009
.3406	019	2	.660108	019	2	.666705	011	2	.673205	018	2	.679610	018
.3502	029	3	.660201	028	3	.666799	028	3	.673297	028	3	.679700	027
.3598	038	4	.660296	038	4	.666892	037	4	.673390	037	4	.679791	036
.3695	048	5	.660391	047	5	.666986	047	5	.673482	048	5	.679882	045
.3791	058	6	.660486	057	6	.667079	058	6	.673574	056	6	.679973	055
.3888	067	7	.660581	067	7	.667173	065	7	.673668	064	7	.680063	064
.3984	077	8	.660676	076	8	.667266	074	8	.673758	074	8	.680154	073
.4080	087	9	.660771	086	9	.667359	084	9	.673850	083	9	.680245	082
.4178	000	4580	.660866	000	4650	.667453	000	4720	.673942	000	4790	.680335	000
.4273	010	1	.660960	009	1	.667546	009	1	.674034	000	1	.680426	009
.4369	019	2	.661055	019	2	.667640	019	2	.674126	018	2	.680517	018
.4465	029	3	.661150	028	3	.667733	028	3	.674218	028	3	.680607	027
.4562	038	4	.661245	038	4	.667826	037	4	.674310	037	4	.680698	036
.4658	048	5	.661339	047	5	.667920	047	5	.674402	048	5	.680789	045
.4754	058	6	.661434	057	6	.668013	056	6	.674494	056	6	.680879	055
.4850	067	7	.661529	066	7	.668106	065	7	.674586	064	7	.680970	064
.4946	077	8	.661623	076	8	.668199	074	8	.674677	074	8	.681060	073
.5042	086	9	.661718	086	9	.668293	084	9	.674769	083	9	.681151	082
.5138	000	4590	.661813	000	4660	.668386	000	4730	.674861	000	4800	.681241	000
.5234	010	1	.661907	009	1	.668479	009	1	.674953	009	1	.681332	009
.5331	019	2	.662002	019	2	.668572	019	2	.675045	018	2	.681422	018
.5427	029	3	.662096	028	3	.668665	028	3	.675136	028	3	.681513	027
.5523	038	4	.662191	038	4	.668758	037	4	.675228	037	4	.681603	036
.5619	048	5	.662285	047	5	.668852	047	5	.675320	048	5	.681693	045
.5714	058	6	.662380	057	6	.668945	056	6	.675412	056	6	.681784	054
.5810	067	7	.662474	066	7	.669038	065	7	.675503	064	7	.681874	063
.5906	077	8	.662569	076	8	.669131	074	8	.675595	074	8	.681964	072
.6002	086	9	.662663	085	9	.669224	084	9	.675687	083	9	.682055	081
.6098	000	4600	.662758	000	4670	.669317	000	4740	.675778	000	4810	.682145	000
.6194	010	1	.662852	009	1	.669410	009	1	.675870	009	1	.682235	009
.6290	019	2	.662947	019	2	.669503	019	2	.675961	018	2	.682326	018
.6386	029	3	.663041	028	3	.669596	028	3	.676053	027	3	.682416	027
.6481	038	4	.663135	038	4	.669689	037	4	.676145	036	4	.682506	036
.6577	048	5	.663229	047	5	.669782	047	5	.676236	046	5	.682596	045
.6673	058	6	.663324	057	6	.669875	056	6	.676328	056	6	.682686	054
.6769	067	7	.663418	066	7	.669967	065	7	.676419	064	7	.682777	063
.6864	077	8	.663512	076	8	.670060	074	8	.676511	073	8	.682867	072
.6960	086	9	.663607	085	9	.670153	084	9	.676602	082	9	.682957	081
.7056	000	4610	.663701	000	4680	.670246	000	4750	.676694	000	4820	.683047	000
.7151	010	1	.663795	009	1	.670339	009	1	.676785	009	1	.683137	009
.7247	019	2	.663889	019	2	.670431	018	2	.676876	018	2	.683227	018
.7343	028	3	.663983	028	3	.670524	028	3	.676968	027	3	.683317	027
.7438	038	4	.664078	038	4	.670617	037	4	.677059	036	4	.683407	036
.7534	047	5	.664172	047	5	.670710	046	5	.677150	046	5	.683497	045
.7629	057	6	.664266	056	6	.670802	056	6	.677242	055	6	.683587	054
.7725	067	7	.664360	066	7	.670895	064	7	.677333	064	7	.683677	063
.7820	076	8	.664454	075	8	.670988	074	8	.677424	073	8	.683767	072
.7916	086	9	.664548	085	9	.671080	083	9	.677516	082	9	.683857	081
.8011	000	4620	.664642	000	4690	.671173	000	4760	.677607	000	4830	.683947	000
.8107	010	1	.664736	009	1	.671265	009	1	.677698	009	1	.684037	009
.8202	019	2	.664830	019	2	.671358	018	2	.677789	018	2	.684127	018
.8298	028	3	.664924	028	3	.671451	028	3	.677881	027	3	.684217	027
.8393	038	4	.665018	038	4	.671543	037	4	.677972	036	4	.684307	036
.8488	047	5	.665112	047	5	.671636	046	5	.678063	046	5	.684396	045
.8584	057	6	.665206	056	6	.671728	055	6	.678154	055	6	.684486	054
.8679	067	7	.665299	066	7	.671821	064	7	.678245	064	7	.684576	063
.8774	076	8	.665393	075	8	.671913	074	8	.678336	073	8	.684666	072
.8870	086	9	.665487	085	9	.672005	084	9	.678427	082	9	.684756	081
.8965	000	4630	.665581	000	4700	.672098	000	4770	.678518	000	4840	.684845	000
.9060	010	1	.665675	009	1	.672190	009	1	.678609	009	1	.684935	009
.9155	019	2	.665769	019	2	.672283	018	2	.678700	018	2	.685025	018
.9250	028	3	.665862	028	3	.672375	028	3	.678791	027	3	.685114	027
.9346	038	4	.665956	038	4	.672467	037	4	.678882	036	4	.685204	036
.9441	047	5	.666050	047	5	.672560	046	5	.678973	045	5	.685294	045
.9536	057	6	.666143	056	6	.672652	055	6	.679064	045	6	.685383	054
.9631	067	7	.666237	066	7	.672744	064	7	.679155	064	7	.685473	063
.9726	076	8	.666331	075	8	.672836	074	8	.679246	073	8	.685563	072
.9821	086	9	.666424	085	9	.672929	083	9	.679337	082	9	.685652	081

Log. .685742 to .715920

No. 4850 to 5199.

No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.
4850	.685742	00	4920	.691965	00	4990	.698100	00	5060	.704180	00	5130	.710	711			
1	.685831	09	1	.692053	09	1	.698188	09	1	.704236	09	1	.710	711			
2	.685921	18	2	.692142	18	2	.698275	17	2	.704322	17	2	.710	711			
3	.686010	27	3	.692230	27	3	.698362	26	3	.704408	26	3	.710	711			
4	.686100	36	4	.692318	36	4	.698448	35	4	.704494	34	4	.710	711			
5	.686189	45	5	.692406	44	5	.698535	44	5	.704579	43	5	.710	711			
6	.686279	54	6	.692494	53	6	.698622	52	6	.704665	52	6	.710	711			
7	.686368	63	7	.692583	62	7	.698709	61	7	.704751	60	7	.710	711			
8	.686457	72	8	.692671	71	8	.698796	70	8	.704837	69	8	.710	711			
9	.686547	81	9	.692759	80	9	.698883	79	9	.704923	77	9	.710	711			
4860	.686636	00	4930	.692847	00	5000	.698970	00	5070	.705008	00	5140	.710	711			
1	.686726	09	1	.692936	09	1	.699057	09	1	.705094	09	1	.711	711			
2	.686815	18	2	.693023	18	2	.699144	17	2	.705179	17	2	.711	711			
3	.686904	27	3	.693111	26	3	.699230	26	3	.705265	26	3	.711	711			
4	.686994	36	4	.693199	35	4	.699317	35	4	.705350	34	4	.711	711			
5	.687083	45	5	.693287	44	5	.699404	44	5	.705436	43	5	.711	711			
6	.687172	54	6	.693375	53	6	.699491	52	6	.705522	52	6	.711	711			
7	.687261	63	7	.693463	62	7	.699577	61	7	.705607	60	7	.711	711			
8	.687351	72	8	.693551	70	8	.699664	70	8	.705693	69	8	.711	711			
9	.687440	81	9	.693639	79	9	.699751	78	9	.705778	77	9	.711	711			
4870	.687529	00	4940	.693727	00	5010	.699838	00	5080	.705864	00	5150	.711	711			
1	.687618	09	1	.693815	09	1	.699924	09	1	.705949	09	1	.711	711			
2	.687707	18	2	.693903	18	2	.700011	17	2	.706035	17	2	.711	711			
3	.687796	27	3	.693991	26	3	.700098	26	3	.706120	26	3	.712	712			
4	.687885	36	4	.694078	35	4	.700184	35	4	.706205	34	4	.712	712			
5	.687975	45	5	.694166	44	5	.700271	44	5	.706291	43	5	.712	712			
6	.688064	54	6	.694254	53	6	.700357	53	6	.706376	51	6	.712	712			
7	.688153	62	7	.694342	62	7	.700444	61	7	.706462	60	7	.712	712			
8	.688242	72	8	.694430	70	8	.700531	70	8	.706547	68	8	.712	712			
9	.688331	80	9	.694517	79	9	.700617	78	9	.706632	77	9	.712	712			
4880	.688420	00	4950	.694605	00	5020	.700704	00	5090	.706718	00	5160	.712	712			
1	.688509	09	1	.694693	09	1	.700790	09	1	.706803	09	1	.712	712			
2	.688598	18	2	.694781	18	2	.700877	17	2	.706888	17	2	.712	712			
3	.688687	27	3	.694868	26	3	.700963	26	3	.706974	26	3	.712	712			
4	.688776	36	4	.694956	35	4	.701050	35	4	.707059	34	4	.712	712			
5	.688865	45	5	.695044	44	5	.701136	43	5	.707144	43	5	.712	712			
6	.688953	54	6	.695131	53	6	.701223	52	6	.707239	51	6	.712	712			
7	.689042	63	7	.695219	62	7	.701309	61	7	.707315	60	7	.712	712			
8	.689131	72	8	.695306	70	8	.701395	70	8	.707400	68	8	.712	712			
9	.689220	80	9	.695394	79	9	.701482	78	9	.707485	77	9	.712	712			
4890	.689309	00	4960	.695482	00	5030	.701568	00	5100	.707570	00	5170	.712	712			
1	.689398	09	1	.695569	09	1	.701654	09	1	.707655	09	1	.712	712			
2	.689486	18	2	.695657	17	2	.701741	17	2	.707740	17	2	.712	712			
3	.689575	27	3	.695744	26	3	.701827	26	3	.707826	26	3	.712	712			
4	.689664	36	4	.695832	35	4	.701913	35	4	.707911	34	4	.712	712			
5	.689753	45	5	.695919	44	5	.701999	43	5	.707996	43	5	.712	712			
6	.689841	54	6	.696007	52	6	.702086	52	6	.708081	51	6	.712	712			
7	.689930	62	7	.696094	61	7	.702172	61	7	.708166	60	7	.712	712			
8	.690019	72	8	.696182	70	8	.702258	70	8	.708251	68	8	.712	712			
9	.690107	80	9	.696269	79	9	.702344	78	9	.708336	77	9	.712	712			
4900	.690196	00	4970	.696356	00	5040	.702430	00	5110	.708421	00	5180	.712	712			
1	.690283	09	1	.696444	09	1	.702517	09	1	.708506	09	1	.712	712			
2	.690373	18	2	.696531	17	2	.702603	17	2	.708591	17	2	.712	712			
3	.690462	27	3	.696618	26	3	.702689	26	3	.708676	26	3	.712	712			
4	.690550	36	4	.696706	35	4	.702775	34	4	.708761	34	4	.712	712			
5	.690639	44	5	.696793	44	5	.702861	43	5	.708846	43	5	.712	712			
6	.690727	53	6	.696880	52	6	.702947	52	6	.708931	51	6	.712	712			
7	.690816	62	7	.696968	61	7	.703033	60	7	.709015	60	7	.712	712			
8	.690905	71	8	.697055	70	8	.703119	69	8	.709100	68	8	.712	712			
9	.690993	80	9	.697142	79	9	.703206	77	9	.709185	77	9	.712	712			
4910	.691081	00	4980	.697229	00	5050	.703291	00	5120	.709270	00	5190	.712	712			
1	.691170	09	1	.697316	09	1	.703377	09	1	.709355	09	1	.712	712			
2	.691258	18	2	.697404	17	2	.703463	17	2	.709440	17	2	.712	712			
3	.691347	27	3	.697491	26	3	.703549	26	3	.709524	25	3	.712	712			
4	.691436	36	4	.697578	35	4	.703635	34	4	.709609	34	4	.712	712			
5	.691523	44	5	.697665	44	5	.703721	43	5	.709694	42	5	.712	712			
6	.691612	53	6	.697752	52	6	.703807	42	6	.709779	51	6	.712	712			
7	.691700	62	7	.697839	61	7	.703893	60	7	.709863	60	7	.712	712			
8	.691789	71	8	.697926	70	8	.703979	69	8	.709948	68	8	.712	712			
9	.691877	80	9	.698013	79	9	.704066	77	9	.710033	76	9	.712	712			

Log. .716003 to .744215

No. 5200 to 5549.

(u.)

No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.
5200	.716003	00	5270	.721811	00	5340	.727541	00	5410	.733197	00	5480	.738781	00
1	.716087	■	1	.721893	08	1	.727623	08	1	.733277	08	1	.738860	08
2	.716170	17	2	.721975	08	2	.727704	16	2	.733358	16	2	.738939	16
3	.716254	25	3	.722058	25	3	.727785	24	3	.733438	24	3	.739018	24
4	.716337	34	4	.722140	33	4	.727866	33	4	.733518	32	4	.739097	32
5	.716421	42	5	.722222	41	5	.727948	41	5	.733598	40	5	.739177	40
6	.716504	50	6	.722305	49	6	.728029	40	6	.733679	48	6	.739256	47
7	.716588	59	7	.722387	■	7	.728110	57	7	.733759	56	7	.739335	55
8	.716671	67	8	.722469	66	8	.728191	65	8	.733839	64	8	.739414	63
9	.716754	76	9	.722552	74	9	.728273	73	9	.733919	72	9	.739493	71
5210	.716838	00	5280	.722634	00	5350	.728354	00	5420	.733999	■	5490	.739572	00
1	.716921	08	1	.722716	08	1	.728435	08	1	.734079	08	1	.739651	08
2	.717004	17	2	.722798	16	2	.728516	16	2	.734159	16	2	.739730	16
3	.717088	25	3	.722881	25	3	.728597	24	3	.734240	24	3	.739810	24
4	.717171	33	4	.722963	33	4	.728678	33	4	.734320	32	4	.739889	32
5	.717254	42	5	.723045	41	5	.728759	41	5	.734400	40	5	.739968	40
6	.717338	50	6	.723127	49	6	.728841	49	6	.734480	48	6	.740047	47
7	.717421	58	7	.723209	■	7	.728922	57	7	.734560	56	7	.740126	55
8	.717504	66	8	.723291	66	8	.729003	65	8	.734640	64	8	.740205	63
9	.717587	75	9	.723374	74	9	.729084	73	9	.734720	72	9	.740284	71
5220	.717670	■	5290	.723456	00	5360	.729165	00	5430	.734800	00	5500	.740363	00
1	.717754	08	1	.723538	08	1	.729246	08	1	.734880	08	1	.740442	08
2	.717837	17	2	.723620	■	2	.729327	16	2	.734960	16	2	.740521	16
3	.717920	25	3	.723702	25	3	.729408	24	3	.735040	24	3	.740600	24
4	.718003	33	4	.723784	33	4	.729489	32	4	.735120	32	4	.740678	32
5	.718086	42	5	.723866	41	5	.729570	41	5	.735200	40	5	.740757	40
6	.718169	■	6	.723948	49	6	.729651	49	6	.735279	48	6	.740836	47
7	.718252	58	7	.724030	57	7	.729732	57	7	.735359	56	7	.740915	55
8	.718335	66	8	.724112	66	8	.729812	65	8	.735439	■	8	.740994	63
9	.718419	75	9	.724194	74	9	.729893	73	9	.735519	72	9	.741073	71
5230	.718502	00	5300	.724276	00	5370	.729974	00	5440	.735599	■	5510	.741152	00
1	.718585	08	1	.724358	08	1	.730055	08	1	.735679	08	1	.741230	08
2	.718668	17	2	.724440	16	2	.730136	16	2	.735758	16	2	.741309	16
3	.718751	25	3	.724522	25	3	.730217	24	3	.735838	24	3	.741388	24
4	.718834	33	4	.724603	33	4	.730298	32	4	.735918	32	4	.741467	32
5	.718917	42	5	.724685	41	5	.730378	40	5	.735998	40	5	.741545	40
6	.719000	50	6	.724767	49	6	.730459	49	6	.736078	48	6	.741624	47
7	.719083	58	7	.724849	57	7	.730540	57	7	.736157	56	7	.741703	55
8	.719165	66	8	.724931	66	8	.730621	65	8	.736237	64	8	.741782	63
9	.719248	75	9	.725013	74	9	.730701	73	9	.736317	72	9	.741860	71
5240	.719331	00	5310	.725094	00	5380	.730782	00	5450	.736396	00	5520	.741939	00
1	.719414	08	1	.725176	08	1	.730863	08	1	.736476	08	1	.742018	08
2	.719497	17	2	.725258	16	2	.730944	16	2	.736556	16	2	.742096	16
3	.719580	25	3	.725340	25	3	.731024	24	3	.736635	24	3	.742175	23
4	.719663	33	4	.725422	33	4	.731105	32	4	.736715	32	4	.742254	31
5	.719745	41	5	.725503	41	5	.731186	40	5	.736795	40	5	.742332	39
6	.719828	50	6	.725585	49	6	.731266	49	6	.736874	48	6	.742411	47
7	.719911	58	7	.725667	57	7	.731347	57	7	.736954	56	7	.742489	55
8	.719994	66	8	.725748	66	8	.731428	65	8	.737033	64	8	.742568	63
9	.720077	75	9	.725830	74	9	.731508	73	9	.737113	72	9	.742647	71
5250	.720159	00	5320	.725912	■	5390	.731589	00	5460	.737193	00	5530	.742725	00
1	.720242	08	1	.725993	08	1	.731669	08	1	.737272	08	1	.742804	08
2	.720325	17	2	.726075	16	2	.731750	16	2	.737352	16	2	.742882	16
3	.720407	25	3	.726156	24	3	.731830	24	3	.737431	24	3	.742961	23
4	.720490	33	4	.726238	33	4	.731911	32	4	.737511	32	4	.743039	31
5	.720573	41	5	.726320	41	5	.731991	40	5	.737590	40	5	.743118	39
6	.720655	50	6	.726401	49	6	.732072	48	6	.737670	48	6	.743196	47
7	.720738	58	7	.726483	67	7	.732152	56	7	.737749	56	7	.743274	55
8	.720821	■	8	.726564	65	8	.732233	64	8	.737828	64	8	.743353	63
9	.720903	75	9	.726646	73	9	.732313	72	9	.737908	72	9	.743431	71
5260	.720986	00	5330	.726727	00	5400	.732394	00	5470	.737987	00	5540	.743510	00
1	.721068	08	1	.726809	08	1	.732474	08	1	.738067	08	1	.743588	08
2	.721151	16	2	.726890	16	2	.732555	16	2	.738146	16	2	.743666	16
3	.721233	25	3	.726972	24	3	.732635	24	3	.738225	24	3	.743745	23
4	.721316	■	4	.727053	33	4	.732715	32	4	.738305	32	4	.743823	31
5	.721398	41	5	.727134	41	5	.732796	40	5	.738384	40	5	.743902	39
6	.721481	49	6	.727216	49	6	.732876	48	6	.738463	48	6	.743980	47
7	.721563	58	7	.727297	57	7	.732956	56	7	.738543	56	7	.744058	55
8	.721646	66	8	.727379	65	8	.733037	64	8	.738622	64	8	.744136	63
9	.721728	74	9	.727460	73	9	.733117	72	9	.738701	72	9	.744215	71

Log. .744293 to .770776

No. 5550 to 5899.

No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.
5550	.744293	00	5620	.749736	00	5690	.755112	00	5760	.760422	00	5830	.7654	
1	.744371	08	1	.749814	08	1	.755189	08	1	.760498	08	1	.7657	
2	.744449	16	2	.749891	16	2	.755265	16	2	.760573	16	2	.7658	
3	.744528	23	3	.749968	23	3	.755341	23	3	.760649	23	3	.7659	
4	.744606	31	4	.750045	31	4	.755417	30	4	.760724	30	4	.7660	
5	.744684	39	5	.750122	39	5	.755494	38	5	.760799	38	5	.7661	
6	.744762	47	6	.750200	47	6	.755570	46	6	.760875	46	6	.7662	
7	.744840	55	7	.750277	54	7	.755646	53	7	.760950	53	7	.7663	
8	.744918	63	8	.750354	62	8	.755722	61	8	.761025	60	8	.7664	
9	.744997	71	9	.750431	70	9	.755799	60	9	.761100	68	9	.7665	
5560	.745075	00	5630	.750508	00	5700	.755875	00	5770	.761176	00	5840	.7666	
1	.745153	08	1	.750585	08	1	.755951	08	1	.761251	08	1	.7667	
2	.745231	16	2	.750663	16	2	.756027	15	2	.761326	15	2	.7668	
3	.745309	23	3	.750740	23	3	.756103	23	3	.761402	23	3	.7669	
4	.745387	31	4	.750817	31	4	.756179	30	4	.761477	30	4	.7670	
5	.745465	39	5	.750894	39	5	.756256	38	5	.761552	38	5	.7671	
6	.745543	47	6	.750971	47	6	.756332	36	6	.761627	45	6	.7672	
7	.745621	55	7	.751048	54	7	.756408	53	7	.761702	53	7	.7673	
8	.745699	62	8	.751125	62	8	.756484	61	8	.761777	60	8	.7674	
9	.745777	70	9	.751202	70	9	.756560	60	9	.761853	68	9	.7675	
5570	.745855	00	5640	.751279	00	5710	.756636	00	5780	.761928	00	5850	.7676	
1	.745933	08	1	.751356	08	1	.756712	08	1	.762003	08	1	.7677	
2	.746011	16	2	.751433	15	2	.756788	15	2	.762078	15	2	.7678	
3	.746089	23	3	.751510	23	3	.756864	23	3	.762153	22	3	.7679	
4	.746167	31	4	.751587	30	4	.756940	30	4	.762228	30	4	.7680	
5	.746245	39	5	.751664	38	5	.757016	38	5	.762303	38	5	.7681	
6	.746323	47	6	.751741	46	6	.757092	46	6	.762378	45	6	.7682	
7	.746401	55	7	.751818	54	7	.757168	53	7	.762453	52	7	.7683	
8	.746478	62	8	.751895	62	8	.757244	61	8	.762528	60	8	.7684	
9	.746556	70	9	.751972	70	9	.757320	60	9	.762603	68	9	.7685	
5580	.746634	00	5650	.752048	00	5720	.757396	00	5790	.762679	00	5860	.7686	
1	.746712	08	1	.752125	08	1	.757472	08	1	.762754	08	1	.7687	
2	.746790	16	2	.752202	15	2	.757548	15	2	.762829	15	2	.7688	
3	.746868	23	3	.752279	23	3	.757624	23	3	.762903	22	3	.7689	
4	.746945	31	4	.752356	30	4	.757700	30	4	.762978	30	4	.7690	
5	.747023	39	5	.752433	38	5	.757775	38	5	.763053	38	5	.7691	
6	.747101	47	6	.752509	46	6	.757851	46	6	.763128	45	6	.7692	
7	.747179	55	7	.752586	54	7	.757927	53	7	.763203	52	7	.7693	
8	.747256	62	8	.752663	62	8	.758003	61	8	.763278	60	8	.7694	
9	.747334	70	9	.752740	70	9	.758079	68	9	.763353	68	9	.7695	
5590	.747412	00	5660	.752816	00	5730	.758155	00	5800	.763428	00	5870	.7696	
1	.747489	08	1	.752893	08	1	.758230	08	1	.763503	07	1	.7697	
2	.747567	16	2	.752970	15	2	.758306	15	2	.763578	15	2	.7698	
3	.747645	23	3	.753047	23	3	.758382	23	3	.763653	22	3	.7699	
4	.747723	31	4	.753123	30	4	.758458	30	4	.763727	30	4	.7700	
5	.747800	39	5	.753200	38	5	.758533	38	5	.763802	37	5	.7701	
6	.747878	47	6	.753277	46	6	.758609	46	6	.763877	45	6	.7702	
7	.747955	54	7	.753353	54	7	.758685	53	7	.763952	52	7	.7703	
8	.748033	62	8	.753430	62	8	.758760	61	8	.764027	60	8	.7704	
9	.748110	70	9	.753506	70	9	.758836	68	9	.764101	67	9	.7705	
5600	.748188	00	5670	.753583	00	5740	.758912	00	5810	.764176	00	5880	.7706	
1	.748266	08	1	.753660	08	1	.759087	08	1	.764251	07	1	.7707	
2	.748343	16	2	.753736	15	2	.759163	15	2	.764326	15	2	.7708	
3	.748421	23	3	.753813	23	3	.759239	23	3	.764400	22	3	.7709	
4	.748498	31	4	.753889	30	4	.759314	30	4	.764475	30	4	.7710	
5	.748576	39	5	.753966	38	5	.759390	38	5	.764550	37	5	.7711	
6	.748653	47	6	.754042	46	6	.759466	45	6	.764624	45	6	.7712	
7	.748731	54	7	.754119	54	7	.759541	53	7	.764699	52	7	.7713	
8	.748808	62	8	.754195	62	8	.759617	60	8	.764774	60	8	.7714	
9	.748885	70	9	.754272	70	9	.759692	68	9	.764848	67	9	.7715	
5610	.748963	00	5680	.754348	00	5750	.759668	00	5820	.764923	00	5890	.7716	
1	.749040	08	1	.754425	08	1	.759743	08	1	.764998	07	1	.7717	
2	.749118	16	2	.754501	15	2	.759819	15	2	.765072	15	2	.7718	
3	.749195	23	3	.754578	23	3	.759894	23	3	.765147	22	3	.7719	
4	.749272	31	4	.754654	30	4	.759970	30	4	.765221	30	4	.7720	
5	.749350	39	5	.754730	38	5	.760045	38	5	.765296	37	5	.7721	
6	.749427	47	6	.754807	46	6	.760121	45	6	.765370	45	6	.7722	
7	.749504	54	7	.754883	53	7	.760196	53	7	.765445	52	7	.7723	
8	.749582	62	8	.754960	61	8	.760272	60	8	.765519	60	8	.7724	
9	.749660	70	9	.755036	69	9	.760347	68	9	.765594	67	9	.7725	

Log. .770552 to .795810

No. 5900 to 6249.

(u.)

No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.
5900	.770552	00	5970	.775974	00	6040	.781037	00	6110	.786041	00	6180	.790988	00
1	.770926	07	1	.776047	07	1	.781109	07	1	.786112	07	1	.791059	07
2	.770999	15	2	.776120	15	2	.781181	14	2	.786183	14	2	.791120	14
3	.771073	22	3	.776192	22	3	.781253	23	3	.786254	21	3	.791199	21
4	.771146	30	4	.776265	29	4	.781324	29	4	.786325	28	4	.791260	28
5	.771220	37	5	.776338	37	5	.781396	36	5	.786396	36	5	.791340	35
6	.771293	45	6	.776411	44	6	.781468	43	6	.786467	43	6	.791410	42
7	.771367	52	7	.776483	51	7	.781540	50	7	.786538	50	7	.791480	40
8	.771440	59	8	.776556	59	8	.781612	59	8	.786609	57	8	.791550	56
9	.771514	67	9	.776629	66	9	.781684	65	9	.786680	64	9	.791620	63
5910	.771587	00	5980	.776701	00	6050	.781755	00	6120	.786751	00	6190	.791691	00
1	.771661	07	1	.776774	07	1	.781827	07	1	.786822	07	1	.791761	07
2	.771734	15	2	.776846	14	2	.781899	14	2	.786893	14	2	.791831	14
3	.771808	22	3	.776919	22	3	.781971	23	3	.786964	21	3	.791901	21
4	.771881	30	4	.776992	29	4	.782042	29	4	.787035	28	4	.791971	28
5	.771955	37	5	.777064	36	5	.782114	36	5	.787106	36	5	.792041	35
6	.772028	44	6	.777137	43	6	.782186	35	6	.787177	43	6	.792111	42
7	.772102	52	7	.777209	51	7	.782258	50	7	.787248	40	7	.792181	49
8	.772175	59	8	.777282	58	8	.782329	58	8	.787319	57	8	.792252	56
9	.772248	67	9	.777354	65	9	.782401	65	9	.787390	64	9	.792322	63
5920	.772322	00	5990	.777427	00	6060	.782473	00	6130	.787460	00	6200	.792392	00
1	.772395	07	1	.777499	07	1	.782544	07	1	.787531	07	1	.792462	07
2	.772468	15	2	.777572	14	2	.782616	14	2	.787602	14	2	.792532	14
3	.772542	22	3	.777644	22	3	.782688	21	3	.787673	21	3	.792602	21
4	.772615	30	4	.777717	29	4	.782759	29	4	.787744	28	4	.792672	28
5	.772688	37	5	.777789	38	5	.782831	36	5	.787815	35	5	.792742	35
6	.772762	44	6	.777862	43	6	.782902	35	6	.787885	42	6	.792812	42
7	.772835	51	7	.777934	51	7	.782974	50	7	.787956	49	7	.792882	49
8	.772908	59	8	.778006	58	8	.783046	57	8	.788027	56	8	.792952	56
9	.772981	66	9	.778079	65	9	.783117	64	9	.788098	63	9	.793022	63
5930	.773055	00	6000	.778151	00	6070	.783189	00	6140	.788168	00	6210	.793092	00
1	.773128	07	1	.778224	07	1	.783260	07	1	.788239	07	1	.793161	07
2	.773201	15	2	.778296	14	2	.783332	14	2	.788310	14	2	.793231	14
3	.773274	22	3	.778368	22	3	.783403	21	3	.788380	21	3	.793301	21
4	.773347	29	4	.778441	29	4	.783475	29	4	.788451	28	4	.793371	28
5	.773421	37	5	.778513	36	5	.783546	38	5	.788522	35	5	.793441	35
6	.773494	44	6	.778585	43	6	.783618	43	6	.788593	42	6	.793511	42
7	.773567	51	7	.778658	51	7	.783689	50	7	.788663	49	7	.793581	49
8	.773640	59	8	.778730	58	8	.783761	57	8	.788734	48	8	.793651	56
9	.773713	66	9	.778802	65	9	.783832	64	9	.788804	63	9	.793721	63
5940	.773786	00	6010	.778874	00	6080	.783904	00	6150	.788875	00	6220	.793790	00
1	.773860	07	1	.778947	07	1	.783975	07	1	.788946	07	1	.793860	07
2	.773933	15	2	.779019	14	2	.784046	14	2	.789018	14	2	.793930	14
3	.774006	22	3	.779091	22	3	.784118	21	3	.789087	21	3	.794000	21
4	.774079	29	4	.779163	29	4	.784189	29	4	.789157	28	4	.794070	28
5	.774152	37	5	.779236	36	5	.784261	36	5	.789228	35	5	.794139	35
6	.774225	44	6	.779308	43	6	.784332	43	6	.789299	42	6	.794209	42
7	.774298	51	7	.779380	51	7	.784403	50	7	.789369	49	7	.794279	49
8	.774371	59	8	.779452	58	8	.784475	57	8	.789440	56	8	.794349	56
9	.774444	66	9	.779524	65	9	.784546	64	9	.789510	63	9	.794418	63
5950	.774517	00	6020	.779596	00	6090	.784617	00	6160	.789581	00	6230	.794488	00
1	.774590	07	1	.779669	07	1	.784689	07	1	.789651	07	1	.794558	07
2	.774663	15	2	.779741	14	2	.784760	14	2	.789722	14	2	.794627	14
3	.774736	22	3	.779813	22	3	.784831	21	3	.789792	21	3	.794697	21
4	.774809	29	4	.779885	29	4	.784902	29	4	.789863	28	4	.794767	28
5	.774882	37	5	.779957	36	5	.784974	36	5	.789933	35	5	.794836	35
6	.774955	44	6	.780029	43	6	.785045	43	6	.790003	42	6	.794906	42
7	.775028	51	7	.780101	50	7	.785116	42	7	.790074	49	7	.794976	49
8	.775100	59	8	.780173	58	8	.785187	57	8	.790144	56	8	.795045	56
9	.775173	66	9	.780245	65	9	.785259	64	9	.790215	63	9	.795115	63
5960	.775246	00	6030	.780317	00	6100	.785330	00	6170	.790285	00	6240	.795185	00
1	.775319	07	1	.780389	07	1	.785401	07	1	.790355	07	1	.795254	07
2	.775392	15	2	.780461	14	2	.785472	14	2	.790426	14	2	.795324	14
3	.775465	22	3	.780533	22	3	.785543	21	3	.790496	21	3	.795393	21
4	.775538	29	4	.780605	29	4	.785614	28	4	.790567	28	4	.795463	28
5	.775610	37	5	.780677	36	5	.785686	36	5	.790637	35	5	.795532	35
6	.775683	44	6	.780749	43	6	.785757	43	6	.790707	42	6	.795602	42
7	.775756	51	7	.780821	50	7	.785828	50	7	.790778	49	7	.795671	49
8	.775829	59	8	.780893	58	8	.785899	57	8	.790848	56	8	.795741	56
9	.775902	66	9	.780965	65	9	.785970	64	9	.790918	63	9	.795810	63

Log. .795880 to .819478

No. 6250 to 6599.

(u.)

No.	Log	Part.	No.	Log	Part.	No.	Log	Part.	No.	Log	Part.	No.	Log	Part.
6250	.796580	00	6320	.800717	00	6390	.805501	00	6460	.810232	00	6530	.814913	
1	.796940	07	1	.800786	07	1	.805589	07	1	.810300	07	1	.814980	
2	.796919	14	2	.800834	14	2	.805637	14	2	.810367	13	2	.815046	
3	.796988	21	3	.800923	21	3	.805705	20	3	.810434	20	3	.815113	
4	.796158	28	4	.800992	28	4	.805773	27	4	.810501	27	4	.815179	
5	.796227	35	5	.801060	34	5	.805840	34	5	.810568	33	5	.815246	
6	.796297	42	6	.801129	41	6	.805908	41	6	.810636	40	6	.815313	
7	.796366	49	7	.801198	48	7	.805976	48	7	.810703	47	7	.815378	
8	.796436	56	8	.801260	55	8	.806044	54	8	.810770	54	8	.815443	
9	.796505	63	9	.801335	62	9	.806112	61	9	.810837	60	9	.815511	
6260	.796574	00	6330	.801404	00	6400	.806180	00	6470	.810904	00	6540	.815578	
1	.796644	07	1	.801473	07	1	.806248	07	1	.810971	07	1	.815644	
2	.796713	14	2	.801541	14	2	.806316	14	2	.811038	13	2	.815710	
3	.796782	21	3	.801609	21	3	.806383	20	3	.811100	20	3	.815777	
4	.796852	27	4	.801678	27	4	.806451	27	4	.811173	27	4	.815843	
5	.796921	35	5	.801747	34	5	.806519	34	5	.811240	33	5	.815910	
6	.796990	42	6	.801815	41	6	.806587	41	6	.811307	40	6	.815976	
7	.797060	49	7	.801884	48	7	.806655	48	7	.811374	47	7	.816043	
8	.797129	56	8	.801953	55	8	.806722	54	8	.811441	54	8	.816109	
9	.797198	62	9	.802021	62	9	.806790	61	9	.811508	60	9	.816175	
6270	.797267	00	6340	.802089	00	6410	.806858	00	6480	.811575	00	6550	.816241	
1	.797337	07	1	.802158	07	1	.806926	07	1	.811642	07	1	.816308	
2	.797406	14	2	.802226	14	2	.806993	14	2	.811709	13	2	.816374	
3	.797475	21	3	.802295	21	3	.807061	20	3	.811776	20	3	.816440	
4	.797544	27	4	.802363	27	4	.807129	27	4	.811843	27	4	.816506	
5	.797614	35	5	.802432	34	5	.807197	34	5	.811910	33	5	.816573	
6	.797683	42	6	.802500	41	6	.807264	41	6	.811977	40	6	.816639	
7	.797752	49	7	.802568	48	7	.807332	48	7	.812044	47	7	.816705	
8	.797821	56	8	.802637	55	8	.807400	54	8	.812111	54	8	.816771	
9	.797890	62	9	.802705	62	9	.807467	61	9	.812178	60	9	.816838	
6280	.797960	00	6350	.802774	00	6420	.807535	00	6490	.812245	00	6560	.816904	
1	.798029	07	1	.802842	07	1	.807603	07	1	.812312	07	1	.816970	
2	.798098	14	2	.802910	14	2	.807670	14	2	.812378	13	2	.817036	
3	.798167	21	3	.802979	21	3	.807738	20	3	.812445	20	3	.817102	
4	.798236	28	4	.803047	27	4	.807805	27	4	.812512	27	4	.817169	
5	.798305	34	5	.803116	34	5	.807873	34	5	.812579	33	5	.817235	
6	.798374	41	6	.803184	41	6	.807941	41	6	.812646	40	6	.817301	
7	.798443	48	7	.803252	48	7	.808008	48	7	.812713	47	7	.817367	
8	.798512	55	8	.803320	55	8	.808076	54	8	.812780	54	8	.817433	
9	.798582	62	9	.803389	62	9	.808144	61	9	.812846	60	9	.817499	
6290	.798651	00	6360	.803457	00	6430	.808211	00	6500	.812913	00	6570	.817565	
1	.798720	07	1	.803525	07	1	.808278	07	1	.812980	07	1	.817631	
2	.798789	14	2	.803594	14	2	.808346	14	2	.813047	13	2	.817698	
3	.798858	21	3	.803662	21	3	.808414	20	3	.813114	20	3	.817764	
4	.798927	28	4	.803730	27	4	.808481	27	4	.813180	27	4	.817830	
5	.798996	34	5	.803798	34	5	.808549	34	5	.813247	33	5	.817896	
6	.799065	41	6	.803867	41	6	.808616	41	6	.813314	40	6	.817962	
7	.799134	48	7	.803935	48	7	.808683	48	7	.813381	47	7	.818028	
8	.799203	55	8	.804003	55	8	.808751	54	8	.813447	54	8	.818094	
9	.799272	62	9	.804071	62	9	.808818	61	9	.813514	60	9	.818160	
6300	.799340	00	6370	.804139	00	6440	.808886	00	6510	.813581	00	6580	.818226	
1	.799409	07	1	.804208	07	1	.808953	07	1	.813648	07	1	.818292	
2	.799478	14	2	.804276	14	2	.809021	13	2	.813714	13	2	.818358	
3	.799547	21	3	.804344	21	3	.809088	20	3	.813781	20	3	.818424	
4	.799616	28	4	.804412	27	4	.809155	27	4	.813848	27	4	.818490	
5	.799685	34	5	.804480	34	5	.809223	34	5	.813914	33	5	.818556	
6	.799754	41	6	.804548	41	6	.809290	40	6	.813981	40	6	.818622	
7	.799823	48	7	.804616	48	7	.809358	47	7	.814048	47	7	.818688	
8	.799892	55	8	.804684	55	8	.809425	54	8	.814114	54	8	.818754	
9	.799960	62	9	.804753	62	9	.809492	61	9	.814181	60	9	.818820	
6310	.800020	00	6380	.804821	00	6450	.809560	00	6520	.814248	00	6590	.818885	
1	.800089	07	1	.804889	07	1	.809627	07	1	.814314	07	1	.818951	
2	.800157	14	2	.804957	14	2	.809694	13	2	.814381	13	2	.819017	
3	.800226	21	3	.805025	20	3	.809762	20	3	.814447	20	3	.819083	
4	.800295	28	4	.805093	27	4	.809830	27	4	.814514	26	4	.819149	
5	.800363	34	5	.805161	34	5	.809898	34	5	.814580	33	5	.819215	
6	.800432	41	6	.805229	41	6	.809966	40	6	.814647	40	6	.819281	
7	.800501	48	7	.805297	48	7	.810031	47	7	.814714	46	7	.819346	
8	.800569	55	8	.805365	54	8	.810098	54	8	.814780	53	8	.819412	
9	.800638	62	9	.805433	61	9	.810165	61	9	.814847	60	9	.819478	

Log. 819544 to .841922

No. 6600 to 6949.

(u.)

Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.
00	6670	.824126	00	6740	.820060	00	6810	.833147	00	6880	.837688	00
07	1	.824191	06	1	.826724	06	1	.833211	06	1	.837652	06
13	2	.824256	13	2	.826789	13	2	.833275	13	2	.837716	13
20	3	.824321	19	3	.826854	19	3	.833339	19	3	.837778	19
26	4	.824386	26	4	.826918	26	4	.833403	26	4	.837841	26
33	5	.824451	32	5	.826982	32	5	.833466	32	5	.837904	32
40	6	.824516	39	6	.827046	39	6	.833530	39	6	.837967	39
46	7	.824581	45	7	.827111	45	7	.833593	45	7	.838030	44
53	8	.824646	52	8	.827175	52	8	.833657	51	8	.838093	50
59	9	.824711	58	9	.827239	58	9	.833721	58	9	.838156	57
00	6680	.824776	00	6750	.829304	00	6820	.833784	00	6890	.838219	00
07	1	.824841	06	1	.829368	06	1	.833848	06	1	.838282	06
13	2	.824906	13	2	.829432	13	2	.833912	13	2	.838345	13
20	3	.824971	19	3	.829497	19	3	.833975	19	3	.838408	19
26	4	.825036	26	4	.829561	26	4	.834039	26	4	.838471	26
33	5	.825101	32	5	.829625	32	5	.834103	32	5	.838534	32
40	6	.825166	39	6	.829690	39	6	.834166	39	6	.838597	39
46	7	.825231	45	7	.829754	45	7	.834230	45	7	.838660	44
53	8	.825296	52	8	.829818	52	8	.834293	51	8	.838723	50
59	9	.825361	58	9	.829882	58	9	.834357	58	9	.838786	57
00	6690	.825426	00	6760	.829947	00	6830	.834421	00	6900	.838849	00
07	1	.825491	06	1	.830011	06	1	.834484	06	1	.838912	06
13	2	.825556	13	2	.830075	13	2	.834548	13	2	.838975	13
20	3	.825621	19	3	.830139	19	3	.834611	19	3	.839038	19
26	4	.825686	26	4	.830204	26	4	.834675	26	4	.839101	26
33	5	.825751	32	5	.830268	32	5	.834738	32	5	.839164	31
40	6	.825815	39	6	.830332	39	6	.834802	39	6	.839227	38
46	7	.825880	45	7	.830396	45	7	.834866	45	7	.839290	35
53	8	.825945	52	8	.830460	51	8	.834929	51	8	.839353	50
59	9	.826010	58	9	.830524	58	9	.834993	58	9	.839415	57
00	6700	.826075	00	6770	.830589	00	6840	.835056	00	6910	.839478	00
07	1	.826140	06	1	.830653	06	1	.835120	06	1	.839541	06
13	2	.826204	13	2	.830717	13	2	.835183	13	2	.839604	13
20	3	.826269	19	3	.830781	19	3	.835246	19	3	.839667	19
26	4	.826334	26	4	.830845	26	4	.835310	26	4	.839729	25
33	5	.826399	32	5	.830909	32	5	.835373	32	5	.839792	31
39	6	.826463	39	6	.830973	39	6	.835437	39	6	.839855	38
46	7	.826528	45	7	.831037	45	7	.835500	45	7	.839918	44
52	8	.826593	52	8	.831102	51	8	.835564	51	8	.839981	50
59	9	.826658	58	9	.831166	58	9	.835627	58	9	.840043	57
00	6710	.826722	00	6780	.831230	00	6850	.835691	00	6920	.840106	00
07	1	.826787	06	1	.831294	06	1	.835754	06	1	.840169	06
13	2	.826852	13	2	.831358	13	2	.835817	13	2	.840232	13
20	3	.826917	19	3	.831422	19	3	.835881	19	3	.840294	19
26	4	.826981	26	4	.831486	26	4	.835944	26	4	.840357	25
33	5	.827046	32	5	.831550	32	5	.836007	32	5	.840420	31
39	6	.827111	39	6	.831614	38	6	.836071	38	6	.840483	38
46	7	.827175	45	7	.831678	45	7	.836134	45	7	.840545	44
52	8	.827240	52	8	.831742	51	8	.836197	51	8	.840608	50
59	9	.827305	58	9	.831806	58	9	.836261	58	9	.840671	57
00	6720	.827369	00	6790	.831870	00	6860	.836324	00	6930	.840733	00
07	1	.827434	06	1	.831934	06	1	.836387	06	1	.840796	06
13	2	.827498	13	2	.831998	13	2	.836451	13	2	.840859	13
20	3	.827563	19	3	.832062	19	3	.836514	19	3	.840922	19
26	4	.827628	26	4	.832125	26	4	.836577	26	4	.840984	25
33	5	.827692	32	5	.832189	32	5	.836640	32	5	.841046	31
39	6	.827757	39	6	.832253	38	6	.836704	38	6	.841109	38
46	7	.827821	45	7	.832317	45	7	.836767	45	7	.841172	44
52	8	.827886	52	8	.832381	51	8	.836831	51	8	.841234	50
59	9	.827950	58	9	.832445	58	9	.836893	58	9	.841297	56
00	6730	.828015	00	6800	.832509	00	6870	.836957	00	6940	.841359	00
07	1	.828080	06	1	.832573	06	1	.837020	06	1	.841422	06
13	2	.828144	13	2	.832637	13	2	.837083	13	2	.841485	13
20	3	.828209	19	3	.832700	19	3	.837146	19	3	.841547	19
26	4	.828273	26	4	.832764	26	4	.837209	26	4	.841610	25
33	5	.828338	32	5	.832828	32	5	.837273	32	5	.841672	31
39	6	.828402	39	6	.832892	38	6	.837336	38	6	.841735	38
46	7	.828466	45	7	.832956	45	7	.837399	44	7	.841797	44
52	8	.828531	52	8	.833019	51	8	.837462	51	8	.841860	50
59	9	.828595	58	9	.833083	58	9	.837525	57	9	.841923	56

Log. .841985 to .863263 No. 6950 to 7299.

No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.
6950	.841985	00	7020	.846337	00	7090	.850648	00	7160	.854913	00	7230	.85913	
1	.842047	06	1	.846399	06	1	.850707	06	1	.854974	06	1	.85919	
2	.842110	12	2	.846461	12	2	.850769	12	2	.855034	12	2	.85925	
3	.842172	19	3	.846523	19	3	.850830	18	3	.855096	18	3	.85931	
4	.842235	25	4	.846584	25	4	.850891	25	4	.855156	24	4	.85937	
5	.842297	31	5	.846646	31	5	.850952	31	5	.855216	30	5	.85943	
6	.842360	37	6	.846708	37	6	.851014	37	6	.855277	36	6	.85949	
7	.842422	44	7	.846770	43	7	.851075	44	7	.855337	42	7	.85955	
8	.842484	50	8	.846832	50	8	.851137	49	8	.855398	48	8	.85961	
9	.842547	56	9	.846893	56	9	.851197	55	9	.855459	54	9	.85967	
6960	.842609	00	7030	.846955	00	7100	.851259	00	7170	.855519	00	7240	.85973	
1	.842672	06	1	.847017	06	1	.851319	06	1	.855580	06	1	.85979	
2	.842734	12	2	.847079	12	2	.851381	12	2	.855640	12	2	.85985	
3	.842796	19	3	.847141	19	3	.851442	18	3	.855701	18	3	.85991	
4	.842859	25	4	.847202	25	4	.851503	25	4	.855761	24	4	.85997	
5	.842921	31	5	.847264	31	5	.851564	31	5	.855822	30	5	.86003	
6	.842983	37	6	.847326	37	6	.851625	37	6	.855882	36	6	.86009	
7	.843046	44	7	.847388	43	7	.851686	44	7	.855943	42	7	.86015	
8	.843108	50	8	.847449	50	8	.851747	49	8	.856003	48	8	.86021	
9	.843170	56	9	.847511	56	9	.851808	55	9	.856064	54	9	.86027	
6970	.843233	00	7040	.847573	00	7110	.851870	00	7180	.856124	00	7250	.86033	
1	.843295	06	1	.847634	06	1	.851931	06	1	.856185	06	1	.86039	
2	.843357	12	2	.847696	12	2	.851992	12	2	.856245	12	2	.86045	
3	.843420	19	3	.847758	18	3	.852053	18	3	.856306	18	3	.86051	
4	.843482	25	4	.847819	25	4	.852114	25	4	.856366	24	4	.86057	
5	.843544	31	5	.847881	31	5	.852175	31	5	.856427	30	5	.86063	
6	.843606	37	6	.847943	37	6	.852236	37	6	.856487	36	6	.86069	
7	.843669	43	7	.848004	43	7	.852297	43	7	.856548	42	7	.86075	
8	.843731	50	8	.848066	40	8	.852358	49	8	.856608	48	8	.86081	
9	.843793	56	9	.848127	55	9	.852419	55	9	.856668	54	9	.86087	
6980	.843855	00	7050	.848189	00	7120	.852480	00	7190	.856729	00	7260	.86093	
1	.843918	06	1	.848251	06	1	.852541	06	1	.856789	06	1	.86099	
2	.843980	12	2	.848312	12	2	.852602	12	2	.856850	12	2	.86105	
3	.844042	19	3	.848374	18	3	.852663	18	3	.856910	18	3	.86111	
4	.844104	25	4	.848435	25	4	.852724	24	4	.856970	24	4	.86117	
5	.844166	31	5	.848497	31	5	.852785	30	5	.857031	30	5	.86123	
6	.844229	37	6	.848559	37	6	.852846	37	6	.857091	36	6	.86129	
7	.844291	43	7	.848620	43	7	.852907	43	7	.857151	42	7	.86135	
8	.844353	50	8	.848682	49	8	.852968	49	8	.857212	48	8	.86141	
9	.844415	56	9	.848743	55	9	.853029	55	9	.857272	54	9	.86147	
6990	.844477	00	7060	.848805	00	7130	.853089	00	7200	.857332	00	7270	.86153	
1	.844539	06	1	.848866	06	1	.853150	06	1	.857393	06	1	.86159	
2	.844601	12	2	.848928	12	2	.853211	12	2	.857453	12	2	.86165	
3	.844663	19	3	.848989	18	3	.853272	18	3	.857513	18	3	.86171	
4	.844726	25	4	.849051	25	4	.853333	24	4	.857574	24	4	.86177	
5	.844788	31	5	.849112	31	5	.853394	30	5	.857634	30	5	.86183	
6	.844850	37	6	.849174	37	6	.853455	37	6	.857694	36	6	.86189	
7	.844912	43	7	.849235	43	7	.853516	43	7	.857754	42	7	.86195	
8	.844974	50	8	.849296	49	8	.853576	49	8	.857815	48	8	.86201	
9	.845036	56	9	.849358	55	9	.853637	55	9	.857875	54	9	.86207	
7000	.845098	00	7070	.849419	00	7140	.853698	00	7210	.857935	00	7280	.86213	
1	.845160	06	1	.849481	06	1	.853759	06	1	.857995	06	1	.86219	
2	.845222	12	2	.849542	12	2	.853820	12	2	.858056	12	2	.86225	
3	.845284	19	3	.849604	18	3	.853881	18	3	.858116	18	3	.86231	
4	.845346	25	4	.849665	25	4	.853941	24	4	.858176	24	4	.86237	
5	.845408	31	5	.849726	31	5	.854002	30	5	.858236	30	5	.86243	
6	.845470	37	6	.849788	37	6	.854063	37	6	.858296	36	6	.86249	
7	.845532	43	7	.849849	43	7	.854124	43	7	.858357	42	7	.86255	
8	.845594	50	8	.849911	49	8	.854184	49	8	.858417	48	8	.86261	
9	.845656	56	9	.849972	55	9	.854245	55	9	.858477	54	9	.86267	
7010	.845718	00	7080	.850033	00	7150	.854306	00	7220	.858537	00	7290	.86273	
1	.845780	06	1	.850095	06	1	.854367	06	1	.858597	06	1	.86279	
2	.845842	12	2	.850156	12	2	.854427	12	2	.858657	12	2	.86285	
3	.845904	19	3	.850217	18	3	.854488	18	3	.858718	18	3	.86291	
4	.845966	25	4	.850279	25	4	.854549	24	4	.858778	24	4	.86297	
5	.846028	31	5	.850340	31	5	.854610	30	5	.858838	30	5	.86303	
6	.846090	37	6	.850401	37	6	.854670	36	6	.858898	36	6	.86309	
7	.846151	43	7	.850462	43	7	.854731	42	7	.858958	42	7	.86315	
8	.846213	50	8	.850524	49	8	.854792	48	8	.859018	48	8	.86321	
9	.846275	56	9	.850585	55	9	.854852	54	9	.859078	54	9	.86327	

Log. .863323 to .883605

No. 7300 to 7649

(u.)

Part	No.	Log.	Part	No.	Log.	Part	No.	Log.	Part	No.	Log.	Part
23 00	7370	.867467	00	7440	.871573	00	7510	.875640	00	7580	.879669	00
32 06	1	.867526	06	1	.871631	06	1	.875698	06	1	.879726	06
42 12	2	.867585	12	2	.871690	12	2	.875756	12	2	.879784	11
51 18	3	.867644	18	3	.871748	18	3	.875813	17	3	.879841	17
61 24	4	.867703	24	4	.871806	23	4	.875871	23	4	.879898	23
70 30	5	.867762	29	5	.871865	29	5	.875929	29	5	.879956	28
80 36	6	.867821	35	6	.871923	35	6	.875987	35	6	.880013	34
90 42	7	.867880	41	7	.871981	41	7	.876045	41	7	.880070	40
98 48	8	.867939	47	8	.872040	47	8	.876102	46	8	.880127	46
58 54	9	.867997	53	9	.872098	53	9	.876160	52	9	.880185	51
17 00	7380	.868056	00	7450	.872156	00	7520	.876218	00	7590	.880242	00
27 06	1	.868115	06	1	.872215	06	1	.876276	06	1	.880299	06
36 12	2	.868174	12	2	.872273	12	2	.876333	12	2	.880356	11
46 18	3	.868233	18	3	.872331	11	3	.876391	17	3	.880413	17
55 24	4	.868292	24	4	.872389	23	4	.876449	23	4	.880471	23
64 30	5	.868350	29	5	.872448	29	5	.876506	29	5	.880528	28
74 36	6	.868409	35	6	.872506	35	6	.876564	34	6	.880585	34
83 42	7	.868468	41	7	.872564	41	7	.876622	40	7	.880642	40
92 48	8	.868527	47	8	.872622	47	8	.876680	46	8	.880699	46
12 54	9	.868586	53	9	.872681	53	9	.876737	52	9	.880756	51
11 00	7390	.868644	00	7460	.872739	00	7530	.876795	00	7600	.880814	00
20 06	1	.868703	06	1	.872797	06	1	.876853	06	1	.880871	06
30 12	2	.868762	12	2	.872855	12	2	.876910	12	2	.880928	11
39 18	3	.868821	18	3	.872913	18	3	.876968	17	3	.880985	17
48 24	4	.868879	24	4	.872972	23	4	.877026	23	4	.881042	23
58 30	5	.868938	29	5	.873030	29	5	.877083	29	5	.881099	28
67 36	6	.868997	35	6	.873088	35	6	.877141	34	6	.881156	34
76 42	7	.869056	41	7	.873146	41	7	.877198	40	7	.881213	40
85 48	8	.869114	47	8	.873204	47	8	.877256	46	8	.881270	46
94 54	9	.869173	53	9	.873262	53	9	.877314	52	9	.881328	51
14 00	7400	.869232	00	7470	.873321	00	7540	.877371	00	7610	.881385	00
23 06	1	.869290	06	1	.873379	06	1	.877429	06	1	.881442	06
32 12	2	.869349	12	2	.873437	12	2	.877486	12	2	.881499	11
42 18	3	.869408	18	3	.873495	18	3	.877544	17	3	.881556	17
51 24	4	.869466	24	4	.873553	23	4	.877602	23	4	.881613	23
60 30	5	.869525	29	5	.873611	29	5	.877659	29	5	.881670	28
69 36	6	.869584	35	6	.873669	35	6	.877717	34	6	.881727	34
78 42	7	.869642	41	7	.873727	41	7	.877774	40	7	.881784	40
87 48	8	.869701	47	8	.873785	47	8	.877832	46	8	.881841	46
96 54	9	.869760	53	9	.873843	53	9	.877889	52	9	.881898	51
16 00	7410	.869818	00	7480	.873902	00	7550	.877947	00	7620	.881955	00
25 06	1	.869877	06	1	.873960	06	1	.878004	06	1	.882012	06
34 12	2	.869935	12	2	.874018	12	2	.878062	12	2	.882069	11
43 18	3	.869994	18	3	.874076	17	3	.878119	17	3	.882126	17
52 24	4	.870053	24	4	.874134	23	4	.878177	23	4	.882183	23
61 30	5	.870111	29	5	.874192	29	5	.878234	29	5	.882240	28
70 36	6	.870170	35	6	.874250	35	6	.878292	34	6	.882297	34
79 42	7	.870228	41	7	.874308	41	7	.878349	40	7	.882354	40
88 48	8	.870287	47	8	.874366	46	8	.878407	46	8	.882411	46
97 54	9	.870345	53	9	.874424	52	9	.878464	52	9	.882468	51
17 00	7420	.870404	00	7490	.874482	00	7560	.878522	00	7630	.882524	00
26 06	1	.870462	06	1	.874540	06	1	.878579	06	1	.882581	06
35 12	2	.870521	12	2	.874598	12	2	.878637	12	2	.882638	11
44 18	3	.870579	18	3	.874656	17	3	.878694	17	3	.882695	17
53 24	4	.870638	24	4	.874714	23	4	.878751	23	4	.882752	23
62 30	5	.870696	29	5	.874772	29	5	.878809	29	5	.882809	28
71 36	6	.870755	35	6	.874830	35	6	.878866	34	6	.882866	34
80 42	7	.870813	41	7	.874887	41	7	.878924	40	7	.882923	40
89 48	8	.870872	47	8	.874945	46	8	.878981	46	8	.882980	46
98 54	9	.870930	53	9	.875003	52	9	.879038	52	9	.883036	51
18 00	7430	.870989	00	7500	.875061	00	7570	.879096	00	7640	.883093	00
27 06	1	.871047	06	1	.875119	06	1	.879153	06	1	.883150	06
36 12	2	.871106	12	2	.875177	12	2	.879211	12	2	.883207	11
45 18	3	.871164	18	3	.875235	17	3	.879268	17	3	.883264	17
54 24	4	.871223	24	4	.875293	23	4	.879325	23	4	.883321	23
63 30	5	.871281	29	5	.875351	29	5	.879383	29	5	.883377	28
72 36	6	.871339	35	6	.875409	35	6	.879440	34	6	.883434	34
81 42	7	.871398	41	7	.875466	41	7	.879497	40	7	.883491	40
90 48	8	.871456	47	8	.875524	46	8	.879555	46	8	.883548	46
99 54	9	.871515	53	9	.875582	52	9	.879612	52	9	.883605	51

Log. .883661 to .903086

No. 7650 to 7999.

No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.
7660	.883661	00	7720	.887617	00	7780	.891537	00	7840	.895432	00	7900	.899343	00
1	.883718	06	1	.887671	06	1	.891593	06	1	.895478	06	1	.899388	06
2	.883775	11	2	.887729	11	2	.891649	11	2	.895533	11	2	.899444	11
3	.883832	17	3	.887786	17	3	.891705	17	3	.895588	17	3	.899499	17
4	.883889	23	4	.887843	23	4	.891760	23	4	.895643	23	4	.899554	23
5	.883945	28	5	.887898	28	5	.891816	28	5	.895699	27	5	.899609	27
6	.884002	34	6	.887954	34	6	.891872	33	6	.895754	33	6	.899664	33
7	.884059	40	7	.888011	39	7	.891927	39	7	.895809	39	7	.899719	39
8	.884115	46	8	.888067	45	8	.891983	44	8	.895864	44	8	.899774	44
9	.884172	51	9	.888123	51	9	.892039	50	9	.895919	50	9	.899829	50
7660	.884229	00	7730	.888179	00	7800	.892095	00	7870	.895975	00	7940	.899885	00
1	.884285	06	1	.888236	06	1	.892150	06	1	.896030	06	1	.899940	06
2	.884342	11	2	.888292	11	2	.892206	11	2	.896085	11	2	.900000	11
3	.884399	17	3	.888348	17	3	.892262	17	3	.896140	17	3	.900055	17
4	.884455	23	4	.888404	22	4	.892317	22	4	.896195	22	4	.900110	22
5	.884512	28	5	.888460	28	5	.892373	28	5	.896251	27	5	.900165	27
6	.884569	34	6	.888516	34	6	.892428	33	6	.896306	33	6	.900220	33
7	.884625	40	7	.888573	39	7	.892484	39	7	.896361	39	7	.900275	39
8	.884682	46	8	.888629	45	8	.892540	44	8	.896416	44	8	.900330	44
9	.884739	51	9	.888685	50	9	.892595	50	9	.896471	50	9	.900385	50
7670	.884795	00	7740	.888741	00	7810	.892651	00	7880	.896526	00	7950	.900490	00
1	.884852	06	1	.888797	06	1	.892707	06	1	.896581	06	1	.900545	06
2	.884909	11	2	.888853	11	2	.892762	11	2	.896636	11	2	.900600	11
3	.884965	17	3	.888909	17	3	.892818	17	3	.896691	17	3	.900655	17
4	.885022	23	4	.888965	22	4	.892873	22	4	.896747	22	4	.900710	22
5	.885078	28	5	.889021	28	5	.892929	28	5	.896802	27	5	.900765	27
6	.885135	34	6	.889077	34	6	.892985	33	6	.896857	33	6	.900820	33
7	.885191	40	7	.889134	39	7	.893040	39	7	.896912	39	7	.900875	39
8	.885248	46	8	.889190	45	8	.893096	44	8	.896967	44	8	.900930	44
9	.885305	51	9	.889246	50	9	.893151	50	9	.897022	50	9	.900985	50
7680	.885361	00	7750	.889302	00	7820	.893207	00	7890	.897077	00	7960	.901090	00
1	.885418	06	1	.889358	06	1	.893262	06	1	.897132	06	1	.901145	06
2	.885474	11	2	.889414	11	2	.893318	11	2	.897187	11	2	.901200	11
3	.885531	17	3	.889470	17	3	.893373	17	3	.897242	17	3	.901255	17
4	.885587	23	4	.889526	22	4	.893429	22	4	.897297	22	4	.901310	22
5	.885644	28	5	.889582	28	5	.893484	28	5	.897352	27	5	.901365	27
6	.885700	34	6	.889638	34	6	.893540	33	6	.897407	33	6	.901420	33
7	.885757	39	7	.889694	39	7	.893595	39	7	.897462	39	7	.901475	39
8	.885813	45	8	.889750	45	8	.893651	44	8	.897517	44	8	.901530	44
9	.885870	51	9	.889806	50	9	.893706	50	9	.897572	50	9	.901585	50
7690	.885926	00	7760	.889862	00	7830	.893762	00	7900	.897627	00	7970	.901690	00
1	.885983	06	1	.889918	06	1	.893817	06	1	.897682	06	1	.901745	06
2	.886039	11	2	.889974	11	2	.893873	11	2	.897737	11	2	.901800	11
3	.886096	17	3	.890030	17	3	.893928	17	3	.897792	17	3	.901855	17
4	.886152	23	4	.890085	22	4	.893984	22	4	.897847	22	4	.901910	22
5	.886209	28	5	.890141	28	5	.894039	28	5	.897902	27	5	.901965	27
6	.886265	34	6	.890197	34	6	.894094	33	6	.897957	33	6	.902020	33
7	.886321	39	7	.890253	39	7	.894150	39	7	.898012	39	7	.902075	39
8	.886378	45	8	.890309	45	8	.894205	44	8	.898067	44	8	.902130	44
9	.886434	51	9	.890365	50	9	.894261	50	9	.898122	50	9	.902185	50
7700	.886491	00	7770	.890421	00	7840	.894317	00	7910	.898177	00	7980	.902290	00
1	.886547	06	1	.890477	06	1	.894371	06	1	.898232	06	1	.902345	06
2	.886603	11	2	.890532	11	2	.894427	11	2	.898286	11	2	.902400	11
3	.886660	17	3	.890588	17	3	.894482	17	3	.898341	17	3	.902455	17
4	.886716	23	4	.890644	22	4	.894538	22	4	.898396	22	4	.902510	22
5	.886773	28	5	.890700	28	5	.894593	28	5	.898451	27	5	.902565	27
6	.886829	34	6	.890756	34	6	.894648	33	6	.898506	33	6	.902620	33
7	.886885	39	7	.890812	39	7	.894704	39	7	.898561	39	7	.902675	39
8	.886942	45	8	.890868	45	8	.894759	44	8	.898616	44	8	.902730	44
9	.886998	51	9	.890924	50	9	.894814	50	9	.898670	50	9	.902785	50
7710	.887054	00	7780	.890980	00	7850	.894870	00	7920	.898725	00	7990	.902890	00
1	.887111	06	1	.891035	06	1	.894925	06	1	.898780	06	1	.902945	06
2	.887167	11	2	.891091	11	2	.894980	11	2	.898835	11	2	.903000	11
3	.887223	17	3	.891147	17	3	.895036	17	3	.898890	17	3	.903055	17
4	.887279	23	4	.891203	22	4	.895091	22	4	.898945	22	4	.903110	22
5	.887336	28	5	.891259	28	5	.895147	28	5	.898999	27	5	.903165	27
6	.887392	34	6	.891314	34	6	.895202	33	6	.899054	33	6	.903220	33
7	.887448	39	7	.891370	39	7	.895257	39	7	.899109	39	7	.903275	39
8	.887505	45	8	.891426	45	8	.895312	44	8	.899164	44	8	.903330	44
9	.887561	51	9	.891481	50	9	.895367	50	9	.899219	50	9	.903385	50

Log. .903090 to .921634

No. 8000 to 8349.

(u.)

Part.	No.	Log	Part.	No.	Log	Part.	No.	Log	Part.	No.	Log	Part.
890	00	8079 .906873	00	8140	.910624	00	8210	.914343	00	8280	.918630	00
44	05	1 .906927	05	1	.910678	05	1	.914396	05	1	.918683	05
98	11	2 .906981	11	2	.910731	11	2	.914449	11	2	.918735	11
153	16	3 .907035	16	3	.910784	16	3	.914502	16	3	.918788	16
107	22	4 .907089	22	4	.910838	21	4	.914555	21	4	.918840	21
161	27	5 .907142	27	5	.910891	27	5	.914608	27	5	.918892	26
16	32	6 .907196	32	6	.910944	32	6	.914660	32	6	.918945	31
170	38	7 .907250	38	7	.910998	37	7	.914713	37	7	.918997	37
24	43	8 .907304	43	8	.911051	43	8	.914766	43	8	.919050	42
78	49	9 .907358	49	9	.911104	48	9	.914819	48	9	.919102	47
132	00	907411	00	8150	.911158	00	8220	.914872	00	8290	.919155	00
87	05	1 .907465	05	1	.911211	05	1	.914925	05	1	.919207	05
41	11	2 .907519	11	2	.911264	11	2	.914977	11	2	.919259	11
95	16	3 .907573	16	3	.911317	16	3	.915030	16	3	.919312	16
149	22	4 .907626	22	4	.911371	21	4	.915083	21	4	.919364	21
103	27	5 .907680	27	5	.911424	27	5	.915136	27	5	.919416	26
158	32	6 .907734	32	6	.911477	32	6	.915189	32	6	.919468	31
112	38	7 .907787	38	7	.911530	37	7	.915241	37	7	.919520	37
166	43	8 .907841	43	8	.911584	42	8	.915294	42	8	.919573	42
20	49	9 .907895	49	9	.911637	48	9	.915347	48	9	.919626	47
74	00	8090 .907948	00	8160	.911690	00	8230	.915400	00	8300	.919678	00
28	05	1 .908002	05	1	.911743	05	1	.915453	05	1	.919730	05
83	11	2 .908056	11	2	.911797	11	2	.915505	11	2	.919783	11
137	16	3 .908109	16	3	.911850	16	3	.915558	16	3	.919835	16
191	22	4 .908163	22	4	.911903	21	4	.915611	21	4	.919887	21
145	27	5 .908217	27	5	.911956	27	5	.915664	27	5	.919939	26
190	32	6 .908270	32	6	.912009	32	6	.915716	32	6	.919992	31
153	38	7 .908324	38	7	.912063	37	7	.915769	37	7	.920044	37
107	43	8 .908378	43	8	.912116	42	8	.915822	42	8	.920096	42
161	49	9 .908431	49	9	.912169	48	9	.915874	48	9	.920148	47
713	00	8100 .908485	00	8170	.912222	00	8240	.915927	00	8310	.920201	00
70	05	1 .908539	05	1	.912275	05	1	.915980	05	1	.920253	05
24	11	2 .908592	11	2	.912328	11	2	.916033	11	2	.920305	11
78	16	3 .908646	16	3	.912381	16	3	.916085	16	3	.920357	16
132	22	4 .908699	21	4	.912435	21	4	.916138	21	4	.920409	21
186	27	5 .908753	27	5	.912488	27	5	.916191	27	5	.920461	26
140	32	6 .908807	32	6	.912541	32	6	.916243	32	6	.920513	31
104	38	7 .908860	37	7	.912594	37	7	.916296	37	7	.920565	37
48	43	8 .908914	43	8	.912647	42	8	.916349	42	8	.920617	42
102	49	9 .908967	48	9	.912700	48	9	.916401	48	9	.920669	47
256	00	8110 .909021	00	8180	.912753	00	8250	.916454	00	8320	.920721	00
110	05	1 .909074	05	1	.912806	05	1	.916507	05	1	.920773	05
164	11	2 .909128	11	2	.912859	11	2	.916559	11	2	.920825	11
118	16	3 .909181	16	3	.912913	16	3	.916612	16	3	.920877	16
72	22	4 .909235	21	4	.912966	21	4	.916664	21	4	.920929	21
26	27	5 .909288	27	5	.913019	27	5	.916717	26	5	.920981	26
80	32	6 .909342	32	6	.913072	32	6	.916770	31	6	.921033	31
134	38	7 .909395	37	7	.913125	37	7	.916822	37	7	.921085	36
188	43	8 .909449	43	8	.913178	42	8	.916875	42	8	.921137	42
142	49	9 .909502	48	9	.913231	48	9	.916927	47	9	.921189	47
76	00	8120 .909556	00	8190	.913284	00	8260	.916980	00	8330	.921241	00
150	05	1 .909609	05	1	.913337	05	1	.917033	05	1	.921293	05
104	11	2 .909663	11	2	.913390	11	2	.917085	11	2	.921345	11
158	16	3 .909716	16	3	.913443	16	3	.917138	16	3	.921397	16
112	22	4 .909770	21	4	.913496	21	4	.917190	21	4	.921449	21
105	27	5 .909823	27	5	.913549	27	5	.917243	26	5	.921501	26
19	32	6 .909877	32	6	.913602	32	6	.917295	31	6	.921553	31
73	38	7 .909930	37	7	.913655	37	7	.917348	37	7	.921605	36
127	43	8 .909984	43	8	.913708	42	8	.917400	42	8	.921657	42
181	49	9 .910037	48	9	.913761	48	9	.917453	47	9	.921709	47
135	00	8130 .910090	00	8200	.913814	00	8270	.917505	00	8340	.921761	00
189	05	1 .910144	05	1	.913867	05	1	.917558	05	1	.921813	05
143	11	2 .910197	11	2	.913920	11	2	.917610	11	2	.921865	11
197	16	3 .910251	16	3	.913973	16	3	.917663	16	3	.921917	16
150	22	4 .910304	21	4	.914026	21	4	.917715	21	4	.921969	21
104	27	5 .910358	27	5	.914079	27	5	.917768	26	5	.922021	26
158	32	6 .910411	32	6	.914131	32	6	.917820	31	6	.922073	31
112	38	7 .910464	37	7	.914184	37	7	.917873	37	7	.922125	36
766	43	8 .910518	43	8	.914237	42	8	.917925	42	8	.922177	42
320	49	9 .910571	48	9	.914290	48	9	.917978	47	9	.922229	47

Log. .921686 to .939469

No. 8350 to 8699.

(u.)

No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.
8350	.921686	00	8420	.925312	00	8490	.928908	00	8560	.932474	00	8630	.936011	00
1	.921738	05	1	.925364	05	1	.928959	05	1	.932524	05	1	.936061	05
2	.921790	10	2	.925415	10	2	.929010	10	2	.932575	10	2	.936111	10
3	.921842	15	3	.925467	15	3	.929061	15	3	.932626	15	3	.936162	15
4	.921894	21	4	.925518	21	4	.929112	20	4	.932677	20	4	.936212	20
5	.921946	26	5	.925570	26	5	.929163	26	5	.932727	25	5	.936262	25
6	.921998	31	6	.925621	31	6	.929214	31	6	.932778	30	6	.936313	30
7	.922050	36	7	.925673	36	7	.929266	36	7	.932829	35	7	.936363	35
8	.922102	42	8	.925724	41	8	.929317	41	8	.932879	40	8	.936413	40
9	.922154	47	9	.925776	46	9	.929368	46	9	.932930	45	9	.936463	45
8360	.922206	00	8430	.925828	00	8500	.929419	00	8570	.932981	00	8640	.936514	00
1	.922258	05	1	.925879	05	1	.929470	05	1	.933031	05	1	.936564	05
2	.922310	10	2	.925931	10	2	.929521	10	2	.933082	10	2	.936614	10
3	.922362	16	3	.925982	15	3	.929572	15	3	.933133	15	3	.936664	15
4	.922414	21	4	.926034	21	4	.929623	20	4	.933183	20	4	.936715	20
5	.922466	26	5	.926085	26	5	.929674	26	5	.933234	25	5	.936765	25
6	.922518	31	6	.926137	31	6	.929725	31	6	.933285	30	6	.936815	30
7	.922570	36	7	.926188	36	7	.929776	36	7	.933335	35	7	.936865	35
8	.922622	42	8	.926239	41	8	.929827	41	8	.933386	40	8	.936916	40
9	.922674	47	9	.926291	46	9	.929878	46	9	.933437	45	9	.936966	45
8370	.922725	00	8440	.926342	00	8510	.929930	00	8580	.933487	00	8650	.937016	00
1	.922777	05	1	.926394	05	1	.929981	05	1	.933538	05	1	.937066	05
2	.922829	10	2	.926445	10	2	.930032	10	2	.933588	10	2	.937116	10
3	.922881	16	3	.926497	15	3	.930083	15	3	.933639	15	3	.937167	15
4	.922933	21	4	.926548	21	4	.930134	20	4	.933690	20	4	.937217	20
5	.922985	26	5	.926600	26	5	.930185	26	5	.933740	25	5	.937267	25
6	.923037	31	6	.926651	31	6	.930236	31	6	.933791	30	6	.937317	30
7	.923088	36	7	.926702	36	7	.930287	36	7	.933841	35	7	.937367	35
8	.923140	42	8	.926754	41	8	.930338	41	8	.933892	40	8	.937418	40
9	.923192	47	9	.926805	46	9	.930389	46	9	.933943	45	9	.937468	45
8380	.923244	00	8450	.926857	00	8520	.930440	00	8590	.933993	00	8660	.937518	00
1	.923296	05	1	.926908	05	1	.930491	05	1	.934044	05	1	.937568	05
2	.923348	10	2	.926959	10	2	.930541	10	2	.934094	10	2	.937618	10
3	.923399	16	3	.927011	15	3	.930592	15	3	.934145	15	3	.937668	15
4	.923451	21	4	.927062	21	4	.930643	20	4	.934195	20	4	.937718	20
5	.923503	26	5	.927114	26	5	.930694	25	5	.934246	25	5	.937769	25
6	.923555	31	6	.927165	31	6	.930745	31	6	.934296	30	6	.937819	30
7	.923607	36	7	.927216	36	7	.930796	36	7	.934347	35	7	.937869	35
8	.923658	42	8	.927268	41	8	.930847	41	8	.934397	40	8	.937919	40
9	.923710	47	9	.927319	46	9	.930898	46	9	.934448	45	9	.937969	45
8390	.923762	00	8460	.927370	00	8530	.930949	00	8600	.934498	00	8670	.938019	00
1	.923814	05	1	.927422	05	1	.931000	05	1	.934549	05	1	.938069	05
2	.923865	10	2	.927473	10	2	.931051	10	2	.934599	10	2	.938119	10
3	.923917	16	3	.927524	15	3	.931102	15	3	.934650	15	3	.938169	15
4	.923969	21	4	.927576	21	4	.931153	20	4	.934700	20	4	.938219	20
5	.924021	26	5	.927627	26	5	.931203	25	5	.934751	25	5	.938269	25
6	.924072	31	6	.927678	31	6	.931254	31	6	.934801	30	6	.938319	30
7	.924124	36	7	.927730	36	7	.931305	36	7	.934852	35	7	.938370	35
8	.924176	42	8	.927781	41	8	.931356	41	8	.934902	40	8	.938420	40
9	.924228	47	9	.927832	46	9	.931407	46	9	.934953	45	9	.938470	45
8400	.924279	00	8470	.927883	00	8540	.931458	00	8610	.935003	00	8680	.938520	00
1	.924331	05	1	.927935	05	1	.931509	05	1	.935054	05	1	.938570	05
2	.924383	10	2	.927986	10	2	.931560	10	2	.935104	10	2	.938620	10
3	.924434	15	3	.928037	15	3	.931610	15	3	.935154	15	3	.938670	15
4	.924486	21	4	.928088	21	4	.931661	20	4	.935205	20	4	.938720	20
5	.924538	26	5	.928140	26	5	.931712	25	5	.935255	25	5	.938770	25
6	.924589	31	6	.928191	31	6	.931763	31	6	.935306	30	6	.938820	30
7	.924641	36	7	.928242	36	7	.931814	36	7	.935356	35	7	.938870	35
8	.924693	42	8	.928293	41	8	.931864	41	8	.935406	40	8	.938920	40
9	.924744	47	9	.928345	46	9	.931915	46	9	.935457	45	9	.938970	45
8410	.924796	00	8480	.928396	00	8550	.931966	00	8620	.935507	00	8690	.939020	00
1	.924848	05	1	.928447	05	1	.932017	05	1	.935558	05	1	.939070	05
2	.924899	10	2	.928498	10	2	.932068	10	2	.935608	10	2	.939120	10
3	.924951	15	3	.928549	15	3	.932118	15	3	.935658	15	3	.939170	15
4	.925002	21	4	.928601	21	4	.932169	20	4	.935709	20	4	.939220	20
5	.925054	26	5	.928652	26	5	.932220	25	5	.935759	25	5	.939270	25
6	.925106	31	6	.928703	31	6	.932271	30	6	.935809	30	6	.939320	30
7	.925157	36	7	.928754	36	7	.932321	35	7	.935860	35	7	.939370	35
8	.925209	41	8	.928805	41	8	.932372	40	8	.935910	40	8	.939420	40
9	.925260	46	9	.928856	46	9	.932423	45	9	.935960	45	9	.939470	45

Log. .989519 to .956601

No. 8700 to 9049.

(u.)

Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.
19 00	8770	.943000	00	8840	.946452	00	8910	.949878	00	8980	.953270	00
09 05	1	.943040	05	1	.946501	05	1	.949926	05	1	.953325	05
19 10	2	.943090	10	2	.946550	10	2	.949975	10	2	.953373	10
09 15	3	.943138	15	3	.946600	15	3	.950024	15	3	.953421	15
19 20	4	.943188	20	4	.946649	20	4	.950073	20	4	.953470	20
09 25	5	.943237	25	5	.946698	25	5	.950121	25	5	.953518	25
19 30	6	.943287	30	6	.946747	30	6	.950170	30	6	.953566	30
09 35	7	.943336	35	7	.946796	35	7	.950219	35	7	.953615	35
18 40	8	.943386	40	8	.946845	40	8	.950267	40	8	.953663	40
08 45	9	.943435	45	9	.946894	45	9	.950316	45	9	.953711	45
18 00	8780	.943494	00	8850	.946943	00	8920	.950365	00	8990	.953760	00
08 05	1	.943544	05	1	.946992	05	1	.950413	05	1	.953808	05
18 10	2	.943593	10	2	.947041	10	2	.950462	10	2	.953856	10
08 15	3	.943643	15	3	.947090	15	3	.950511	15	3	.953905	15
18 20	4	.943692	20	4	.947139	20	4	.950560	20	4	.953953	20
07 25	5	.943742	25	5	.947189	25	5	.950608	25	5	.954001	25
17 30	6	.943791	30	6	.947238	30	6	.950657	30	6	.954049	30
07 35	7	.943841	35	7	.947287	35	7	.950705	35	7	.954098	35
17 40	8	.943890	40	8	.947336	40	8	.950754	40	8	.954146	40
07 45	9	.943939	45	9	.947385	45	9	.950803	45	9	.954194	45
16 00	8790	.943989	00	8860	.947434	00	8930	.950851	00	9000	.954242	00
06 05	1	.944038	05	1	.947483	05	1	.950900	05	1	.954291	05
16 10	2	.944088	10	2	.947532	10	2	.950949	10	2	.954339	10
06 15	3	.944137	15	3	.947581	15	3	.950997	15	3	.954387	15
16 20	4	.944186	20	4	.947630	20	4	.951046	20	4	.954435	20
05 25	5	.944236	25	5	.947679	25	5	.951095	25	5	.954484	25
15 30	6	.944285	30	6	.947728	30	6	.951143	30	6	.954532	30
05 35	7	.944335	35	7	.947777	35	7	.951192	35	7	.954580	35
15 40	8	.944384	40	8	.947826	40	8	.951240	40	8	.954628	40
04 45	9	.944433	45	9	.947875	45	9	.951289	45	9	.954677	45
14 00	8800	.944483	00	8870	.947924	00	8940	.951337	00	9010	.954725	00
04 05	1	.944532	05	1	.947973	05	1	.951386	05	1	.954773	05
14 10	2	.944581	10	2	.948021	10	2	.951435	10	2	.954821	10
03 15	3	.944631	15	3	.948070	15	3	.951483	15	3	.954869	15
13 20	4	.944680	20	4	.948119	20	4	.951532	20	4	.954918	20
03 25	5	.944729	25	5	.948168	25	5	.951580	25	5	.954966	25
13 30	6	.944779	30	6	.948217	30	6	.951629	30	6	.955014	30
02 35	7	.944828	35	7	.948266	35	7	.951677	35	7	.955062	35
12 40	8	.944877	40	8	.948315	40	8	.951726	40	8	.955110	40
02 45	9	.944927	45	9	.948364	45	9	.951774	45	9	.955158	45
11 00	8810	.944976	00	8880	.948413	00	8950	.951823	00	9020	.955206	00
01 05	1	.945025	05	1	.948462	05	1	.951872	05	1	.955255	05
11 10	2	.945074	10	2	.948511	10	2	.951920	10	2	.955303	10
01 15	3	.945124	15	3	.948560	15	3	.951969	15	3	.955351	15
10 20	4	.945173	20	4	.948608	20	4	.952017	20	4	.955399	20
00 25	5	.945222	25	5	.948657	25	5	.952066	25	5	.955447	25
10 30	6	.945272	30	6	.948706	30	6	.952114	30	6	.955495	30
00 35	7	.945321	35	7	.948755	35	7	.952163	35	7	.955543	35
10 40	8	.945370	40	8	.948804	40	8	.952211	40	8	.955591	40
00 45	9	.945419	45	9	.948853	45	9	.952259	45	9	.955640	45
18 00	8820	.945469	00	8890	.948902	00	8960	.952308	00	9030	.955688	00
08 05	1	.945518	05	1	.948951	05	1	.952356	05	1	.955736	05
17 10	2	.945567	10	2	.948999	10	2	.952405	10	2	.955784	10
07 15	3	.945616	15	3	.949048	15	3	.952453	15	3	.955832	15
16 20	4	.945665	20	4	.949097	20	4	.952502	20	4	.955880	20
06 25	5	.945715	25	5	.949146	25	5	.952550	25	5	.955928	25
16 30	6	.945764	30	6	.949195	30	6	.952599	30	6	.955976	30
06 35	7	.945813	35	7	.949244	35	7	.952647	35	7	.956024	35
15 40	8	.945862	40	8	.949293	40	8	.952696	40	8	.956072	40
05 45	9	.945911	45	9	.949341	45	9	.952744	45	9	.956120	45
14 00	8830	.945961	00	8900	.949390	00	8970	.952792	00	9040	.956168	00
04 05	1	.946010	05	1	.949439	05	1	.952841	05	1	.956216	05
13 10	2	.946059	10	2	.949488	10	2	.952889	10	2	.956264	10
03 15	3	.946108	15	3	.949536	15	3	.952938	15	3	.956312	15
12 20	4	.946157	20	4	.949585	20	4	.952986	20	4	.956361	20
02 25	5	.946207	25	5	.949634	25	5	.953034	25	5	.956409	25
11 30	6	.946256	30	6	.949683	30	6	.953083	30	6	.956457	30
01 35	7	.946305	35	7	.949731	35	7	.953131	35	7	.956505	35
10 40	8	.946354	40	8	.949780	40	8	.953180	40	8	.956553	40
00 45	9	.946403	45	9	.949829	45	9	.953228	45	9	.956601	45

Log. .956649 to .973082

No. 9050 to 9299

No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.
9050	.956649	00	9120	.958995	00	9190	.963315	00	9260	.968611	00	9330	.973961	00
1	.956697	05	1	.960042	05	1	.963363	05	1	.968658	05	1	.974008	05
2	.956744	10	2	.960090	10	2	.963410	09	2	.968705	09	2	.974055	09
3	.956792	14	3	.960138	14	3	.963457	14	3	.968752	14	3	.974102	14
4	.956840	19	4	.960185	19	4	.963504	19	4	.968798	19	4	.974149	19
5	.956888	24	5	.960233	24	5	.963552	24	5	.968845	24	5	.974196	24
6	.956936	20	6	.960280	28	6	.963599	28	6	.968892	28	6	.974243	28
7	.956984	34	7	.960328	33	7	.963646	33	7	.968939	33	7	.974290	33
8	.957032	38	8	.960376	38	8	.963693	38	8	.968986	38	8	.974337	38
9	.957080	43	9	.960423	43	9	.963741	42	9	.969033	42	9	.974384	42
9060	.957128	00	9130	.960471	00	9200	.963788	00	9270	.967080	00	9340	.974431	00
1	.957176	05	1	.960518	05	1	.963835	05	1	.967127	05	1	.974478	05
2	.957224	10	2	.960566	10	2	.963882	09	2	.967173	09	2	.974525	09
3	.957272	14	3	.960613	14	3	.963929	14	3	.967220	14	3	.974572	14
4	.957320	19	4	.960661	19	4	.963977	19	4	.967267	19	4	.974619	19
5	.957368	24	5	.960709	24	5	.964024	24	5	.967314	24	5	.974666	24
6	.957416	29	6	.960756	28	6	.964071	28	6	.967361	28	6	.974713	28
7	.957464	34	7	.960804	33	7	.964118	33	7	.967408	33	7	.974760	33
8	.957511	38	8	.960851	38	8	.964165	38	8	.967454	38	8	.974807	38
9	.957559	43	9	.960899	43	9	.964212	42	9	.967501	42	9	.974854	42
9070	.957607	00	9140	.960946	00	9210	.964260	00	9280	.967548	00	9350	.974901	00
1	.957655	05	1	.960994	05	1	.964307	05	1	.967595	05	1	.974948	05
2	.957703	10	2	.961041	10	2	.964354	09	2	.967642	09	2	.974995	09
3	.957751	14	3	.961089	14	3	.964401	14	3	.967688	14	3	.975042	14
4	.957799	19	4	.961136	19	4	.964448	19	4	.967735	19	4	.975089	19
5	.957847	24	5	.961184	24	5	.964495	24	5	.967782	23	5	.975136	23
6	.957894	29	6	.961231	28	6	.964542	28	6	.967829	28	6	.975183	28
7	.957942	34	7	.961279	33	7	.964590	33	7	.967875	33	7	.975230	33
8	.957990	38	8	.961326	38	8	.964637	38	8	.967922	38	8	.975277	38
9	.958038	43	9	.961374	43	9	.964684	42	9	.967969	42	9	.975324	42
9080	.958086	00	9150	.961421	00	9220	.964731	00	9290	.968011	00	9360	.975371	00
1	.958134	05	1	.961469	05	1	.964778	05	1	.968058	05	1	.975418	05
2	.958181	10	2	.961516	10	2	.964825	09	2	.968105	09	2	.975465	09
3	.958229	14	3	.961563	14	3	.964872	14	3	.968152	14	3	.975512	14
4	.958277	19	4	.961611	19	4	.964919	19	4	.968199	19	4	.975559	19
5	.958325	24	5	.961658	24	5	.964966	24	5	.968246	23	5	.975606	23
6	.958373	29	6	.961706	28	6	.965013	28	6	.968293	28	6	.975653	28
7	.958420	34	7	.961753	33	7	.965060	33	7	.968340	33	7	.975700	33
8	.958468	38	8	.961801	38	8	.965108	38	8	.968387	38	8	.975747	38
9	.958516	43	9	.961848	43	9	.965155	42	9	.968434	42	9	.975794	42
9090	.958564	00	9160	.961895	00	9230	.965202	00	9300	.968483	00	9370	.975841	00
1	.958612	05	1	.961943	05	1	.965249	05	1	.968530	05	1	.975888	05
2	.958659	10	2	.961990	10	2	.965296	09	2	.968577	09	2	.975935	09
3	.958707	14	3	.962038	14	3	.965343	14	3	.968624	14	3	.975982	14
4	.958755	19	4	.962085	19	4	.965390	19	4	.968671	19	4	.976029	19
5	.958803	24	5	.962132	24	5	.965437	24	5	.968718	23	5	.976076	23
6	.958850	29	6	.962180	28	6	.965484	28	6	.968765	28	6	.976123	28
7	.958898	34	7	.962227	33	7	.965531	33	7	.968812	33	7	.976170	33
8	.958946	38	8	.962275	38	8	.965578	38	8	.968859	37	8	.976217	37
9	.958994	43	9	.962322	43	9	.965625	42	9	.968906	42	9	.976264	42
9100	.959041	00	9170	.962369	00	9240	.965672	00	9310	.968953	00	9380	.976311	00
1	.959089	05	1	.962417	05	1	.965719	05	1	.968999	05	1	.976358	05
2	.959137	10	2	.962464	10	2	.965766	09	2	.969046	09	2	.976405	09
3	.959184	14	3	.962511	14	3	.965813	14	3	.969093	14	3	.976452	14
4	.959232	19	4	.962559	19	4	.965860	19	4	.969139	19	4	.976499	19
5	.959280	24	5	.962606	24	5	.965907	24	5	.969186	23	5	.976546	23
6	.959328	29	6	.962653	28	6	.965954	28	6	.969233	28	6	.976593	28
7	.959375	34	7	.962701	33	7	.966001	33	7	.969279	33	7	.976640	33
8	.959423	38	8	.962748	38	8	.966048	38	8	.969326	37	8	.976687	37
9	.959471	43	9	.962795	42	9	.966095	42	9	.969373	42	9	.976734	42
9110	.959518	00	9180	.962843	00	9250	.966142	00	9320	.969416	00	9390	.976781	00
1	.959566	05	1	.962890	05	1	.966189	05	1	.969463	05	1	.976828	05
2	.959614	10	2	.962937	10	2	.966236	09	2	.969509	09	2	.976875	09
3	.959661	14	3	.962985	14	3	.966283	14	3	.969556	14	3	.976922	14
4	.959709	19	4	.963032	19	4	.966329	19	4	.969602	19	4	.976969	19
5	.959757	24	5	.963079	24	5	.966376	24	5	.969649	23	5	.977016	23
6	.959804	29	6	.963126	28	6	.966423	28	6	.969695	28	6	.977063	28
7	.959852	34	7	.963174	33	7	.966470	33	7	.969742	33	7	.977110	33
8	.959900	38	8	.963221	38	8	.966517	38	8	.969788	37	8	.977157	37
9	.959947	43	9	.963268	42	9	.966564	42	9	.969835	42	9	.977204	42

Log. 973125 to .988960

No. 9400 to 9749

(u.)

pg.	Part	No.	Log	Part.	No.	Log	Part.	No.	Log	Part.	No.	Log	Part.
3128	00	9470	976350	00	9540	979540	00	9610	982723	00	9680	985875	00
3174	05	1	976396	05	1	979594	05	1	982769	05	1	985920	04
3220	09	2	976442	09	2	979639	09	2	982814	09	2	985965	09
3266	14	3	976487	14	3	979685	14	3	982859	14	3	986010	13
3313	18	4	976533	18	4	979730	18	4	982904	18	4	986055	18
3350	23	5	976579	23	5	979776	23	5	982949	23	5	986100	22
3405	28	6	976625	28	6	979821	27	6	982994	27	6	986144	27
3451	32	7	976671	32	7	979867	32	7	983040	32	7	986189	31
3497	37	8	976717	37	8	979912	36	8	983086	36	8	986234	36
3543	41	9	976762	41	9	979958	41	9	983130	41	9	986279	40
3590	00	9480	976808	00	9550	980003	00	9620	983175	00	9690	986324	00
3636	05	1	976854	05	1	980049	05	1	983220	05	1	986369	04
3682	09	2	976900	09	2	980095	09	2	983265	09	2	986413	09
3728	14	3	976946	14	3	980140	14	3	983310	14	3	986458	13
3774	18	4	976991	18	4	980186	18	4	983356	18	4	986503	18
3820	23	5	977037	23	5	980231	23	5	983401	23	5	986548	22
3866	28	6	977083	27	6	980276	27	6	983446	27	6	986593	27
3913	32	7	977129	32	7	980322	32	7	983491	32	7	986637	31
3959	37	8	977175	37	8	980367	30	8	983536	30	8	986682	36
4005	41	9	977220	41	9	980412	41	9	983581	41	9	986727	40
4051	00	9490	977266	00	9560	980458	00	9630	983626	00	9700	986772	00
4097	05	1	977312	05	1	980503	05	1	983671	05	1	986816	04
4143	09	2	977358	09	2	980549	09	2	983716	09	2	986861	09
4189	14	3	977403	14	3	980594	14	3	983762	14	3	986906	13
4235	18	4	977449	18	4	980640	18	4	983807	18	4	986951	18
4281	23	5	977495	23	5	980685	23	5	983852	23	5	986996	22
4327	28	6	977541	27	6	980730	27	6	983897	27	6	987040	27
4373	32	7	977586	32	7	980776	32	7	983942	32	7	987085	31
4420	37	8	977632	37	8	980821	36	8	983987	36	8	987130	36
4466	41	9	977678	41	9	980867	41	9	984032	41	9	987174	40
4512	00	9500	977724	00	9570	980912	00	9640	984077	00	9710	987219	00
4558	05	1	977769	05	1	980957	05	1	984122	05	1	987264	04
4604	09	2	977815	09	2	981003	09	2	984167	09	2	987309	09
4650	14	3	977861	14	3	981048	14	3	984212	14	3	987353	13
4696	18	4	977906	18	4	981093	18	4	984257	18	4	987398	18
4742	23	5	977952	23	5	981139	23	5	984302	23	5	987443	22
4788	28	6	977998	27	6	981184	27	6	984347	27	6	987487	27
4834	32	7	978043	32	7	981229	32	7	984392	32	7	987532	31
4880	37	8	978089	37	8	981275	36	8	984437	36	8	987577	36
4926	41	9	978135	41	9	981320	41	9	984482	41	9	987622	40
4972	00	9510	978180	00	9580	981365	00	9650	984527	00	9720	987666	00
5018	05	1	978226	05	1	981411	05	1	984572	05	1	987711	04
5064	09	2	978272	09	2	981456	09	2	984617	09	2	987756	09
5110	14	3	978317	14	3	981501	14	3	984662	14	3	987800	13
5156	18	4	978363	18	4	981547	18	4	984707	18	4	987845	18
5202	23	5	978409	23	5	981592	23	5	984752	23	5	987890	22
5248	28	6	978454	27	6	981637	27	6	984797	27	6	987934	27
5294	32	7	978500	32	7	981683	32	7	984842	32	7	987979	31
5340	37	8	978546	37	8	981728	36	8	984887	36	8	988024	36
5386	41	9	978591	41	9	981773	41	9	984932	41	9	988068	40
5432	00	9520	978637	00	9590	981819	00	9660	984977	00	9730	988113	00
5478	05	1	978683	05	1	981864	05	1	985022	05	1	988157	04
5524	09	2	978728	09	2	981909	09	2	985067	09	2	988202	09
5570	14	3	978774	14	3	981954	14	3	985112	14	3	988247	13
5616	18	4	978819	18	4	982000	18	4	985157	18	4	988291	18
5661	23	5	978865	23	5	982045	23	5	985202	23	5	988336	22
5707	28	6	978911	27	6	982090	27	6	985247	27	6	988381	27
5753	32	7	978956	32	7	982135	32	7	985292	32	7	988425	31
5799	37	8	979002	36	8	982181	36	8	985337	36	8	988470	36
5845	41	9	979047	41	9	982226	41	9	985382	41	9	988514	40
5891	00	9530	979093	00	9600	982271	00	9670	985426	00	9740	988559	00
5937	05	1	979138	05	1	982316	05	1	985471	04	1	988603	04
5983	09	2	979184	09	2	982362	09	2	985516	09	2	988648	09
6029	14	3	979230	14	3	982407	14	3	985561	13	3	988693	13
6075	18	4	979275	18	4	982452	18	4	985606	18	4	988737	18
6121	23	5	979321	23	5	982497	23	5	985651	22	5	988782	22
6166	28	6	979366	27	6	982543	27	6	985696	27	6	988826	27
6212	32	7	979412	32	7	982588	32	7	985741	31	7	988871	31
6258	37	8	979457	36	8	982633	36	8	985786	36	8	988915	36
6304	41	9	979503	41	9	982678	41	9	985830	40	9	988960	40

Log. .989005 to .999957

No. 9750 to 9999.

(u.)

No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.
9760	.989005	00	9800	.991226	00	9850	.993436	00	9900	.995635	00	9950	.997823	00
1	.989049	04	1	.991270	04	1	.993480	04	1	.995679	04	1	.997867	04
2	.989094	09	2	.991315	09	2	.993524	09	2	.995723	09	2	.997910	09
3	.989138	13	3	.991359	13	3	.993568	13	3	.995767	13	3	.997954	13
4	.989183	18	4	.991403	18	4	.993613	18	4	.995811	18	4	.997998	18
5	.989227	22	5	.991448	22	5	.993657	22	5	.995854	22	5	.998041	22
6	.989272	27	6	.991492	27	6	.993701	26	6	.995898	26	6	.998085	26
7	.989316	31	7	.991536	31	7	.993745	31	7	.995942	31	7	.998128	31
8	.989361	36	8	.991580	36	8	.993789	35	8	.995986	35	8	.998172	35
9	.989405	40	9	.991625	40	9	.993833	40	9	.996030	40	9	.998216	40
9760	.989450	00	9810	.991669	00	9860	.993877	00	9910	.996074	00	9960	.998259	00
1	.989494	04	1	.991713	04	1	.993921	04	1	.996117	04	1	.998303	04
2	.989539	09	2	.991757	09	2	.993965	09	2	.996161	09	2	.998346	09
3	.989583	13	3	.991802	13	3	.994009	13	3	.996205	13	3	.998390	13
4	.989628	18	4	.991846	18	4	.994053	18	4	.996249	18	4	.998434	18
5	.989672	22	5	.991890	22	5	.994097	22	5	.996293	22	5	.998477	22
6	.989717	27	6	.991934	27	6	.994141	26	6	.996336	26	6	.998521	26
7	.989761	31	7	.991979	31	7	.994185	31	7	.996380	31	7	.998564	31
8	.989806	36	8	.992023	36	8	.994229	35	8	.996424	35	8	.998608	35
9	.989850	40	9	.992067	40	9	.994273	40	9	.996468	40	9	.998652	40
9770	.989895	00	9820	.992111	00	9870	.994317	00	9920	.996512	00	9970	.998695	00
1	.989939	04	1	.992156	04	1	.994361	04	1	.996555	04	1	.998739	04
2	.989983	09	2	.992200	09	2	.994405	09	2	.996599	09	2	.998782	09
3	.990028	13	3	.992244	13	3	.994449	13	3	.996643	13	3	.998826	13
4	.990072	18	4	.992288	18	4	.994493	18	4	.996687	18	4	.998869	18
5	.990117	22	5	.992333	22	5	.994537	22	5	.996730	22	5	.998913	22
6	.990161	27	6	.992377	26	6	.994581	26	6	.996774	26	6	.998956	26
7	.990206	31	7	.992421	31	7	.994625	31	7	.996818	31	7	.999000	31
8	.990250	36	8	.992465	35	8	.994669	35	8	.996862	35	8	.999043	35
9	.990294	40	9	.992509	40	9	.994713	40	9	.996906	40	9	.999087	40
9780	.990339	00	9830	.992553	00	9880	.994757	00	9930	.996949	00	9980	.999130	00
1	.990383	04	1	.992598	04	1	.994801	04	1	.996993	04	1	.999174	04
2	.990428	09	2	.992642	09	2	.994845	09	2	.997037	09	2	.999218	09
3	.990472	13	3	.992686	13	3	.994889	13	3	.997080	13	3	.999261	13
4	.990516	18	4	.992730	18	4	.994933	18	4	.997124	18	4	.999305	18
5	.990561	22	5	.992774	22	5	.994977	22	5	.997168	22	5	.999348	22
6	.990605	27	6	.992818	26	6	.995021	26	6	.997212	26	6	.999391	26
7	.990650	31	7	.992863	31	7	.995064	31	7	.997255	31	7	.999435	31
8	.990694	36	8	.992907	35	8	.995108	35	8	.997299	35	8	.999478	35
9	.990738	40	9	.992951	40	9	.995152	40	9	.997343	39	9	.999522	39
9790	.990783	00	9840	.992995	00	9890	.995196	00	9940	.997386	00	9990	.999565	00
1	.990827	04	1	.993039	04	1	.995240	04	1	.997430	04	1	.999609	04
2	.990871	09	2	.993083	09	2	.995284	09	2	.997474	09	2	.999653	09
3	.990916	13	3	.993127	13	3	.995328	13	3	.997517	13	3	.999696	13
4	.990960	18	4	.993172	18	4	.995372	18	4	.997561	17	4	.999739	17
5	.991004	22	5	.993216	22	5	.995416	22	5	.997605	22	5	.999783	22
6	.991049	27	6	.993260	27	6	.995460	26	6	.997648	26	6	.999826	26
7	.991093	31	7	.993304	31	7	.995504	31	7	.997692	30	7	.999870	30
8	.991137	36	8	.993348	35	8	.995547	35	8	.997736	35	8	.999913	35
9	.991181	40	9	.993392	40	9	.995591	40	9	.997779	39	9	.999957	39

(u. 2) Table for converting Minutes and Seconds into Seconds.

m. or s.	0'	1'	2'	3'	4'	5'	6'	7'	8'	9'
0	0	60	120	180	240	300	360	420	480	540
10	600	660	720	780	840	900	960	1020	1080	1140
20	1200	1260	1320	1380	1440	1500	1560	1620	1680	1740
30	1800	1860	1920	1980	2040	2100	2160	2220	2280	2340
40	2400	2460	2520	2580	2640	2700	2760	2820	2880	2940
50	3000	3060	3120	3180	3240	3300	3360	3420	3480	3540

1° or 1^h = 3600"2° or 2^h = 7200"3° or 3^h = 10800"4° or 4^h = 14400"5° or 5^h = 18000"6° or 6^h = 21600"

Natural Verses to Seconds of Time.

0 ^m	1 ^m	2 ^m	3 ^m	4 ^m	5 ^m	6 ^m	7 ^m	8 ^m	9 ^m	10 ^m	11 ^m	sec.
0	10	30	50	152	238	343	466	609	771	1111	1152	0
0	10	30	50	153	240	345	469	612	774	1112	1155	1
0	10	30	50	155	241	346	471	614	777	1113	1159	2
0	10	40	80	156	243	348	473	617	780	1114	1162	3
0	11	41	90	157	244	350	475	619	782	1115	1166	4
0	11	41	91	159	246	352	478	622	785	1116	1169	5
0	12	42	92	160	248	354	480	624	788	1117	1173	6
0	12	43	93	161	249	356	482	627	791	1118	1176	7
0	12	43	93	163	251	358	484	630	794	1119	1180	8
0	13	44	94	164	253	360	487	632	797	1120	1183	9
0	13	45	95	165	254	362	489	635	800	1121	1187	10
0	13	45	96	167	256	364	491	637	803	1122	1190	11
0	14	46	97	168	257	366	493	640	806	1123	1194	12
0	14	47	98	169	259	368	496	643	809	1124	1197	13
1	14	47	99	171	261	370	498	645	811	1125	1201	14
1	15	48	100	172	262	372	500	648	814	1126	1205	15
1	16	49	102	173	264	374	503	650	817	1127	1208	16
1	16	49	103	175	266	376	505	653	820	1128	1212	17
1	16	50	104	176	267	378	507	656	823	1129	1215	18
1	17	51	106	177	269	380	510	658	826	1130	1219	19
1	17	52	106	179	271	382	512	661	829	1131	1222	20
1	17	53	107	180	272	384	514	664	832	1132	1226	21
1	18	53	108	182	274	386	517	666	835	1133	1230	22
1	18	54	109	183	276	388	519	669	838	1134	1233	23
2	19	55	110	184	278	390	521	672	841	1135	1237	24
2	19	56	111	185	279	392	524	674	844	1136	1241	25
2	20	56	112	187	281	394	526	677	847	1137	1244	26
2	20	57	113	188	283	396	528	680	850	1138	1248	27
2	20	58	114	190	284	398	531	683	853	1139	1251	28
2	21	59	116	191	286	400	533	685	856	1140	1255	29
3	21	59	117	193	288	402	535	688	859	1141	1259	30
3	22	60	118	194	290	404	538	690	862	1142	1262	31
3	22	61	119	196	291	406	540	693	865	1143	1266	32
3	23	62	120	197	293	408	543	696	868	1144	1270	33
3	23	63	121	198	295	410	545	699	871	1145	1273	34
3	24	64	122	200	297	412	547	701	874	1146	1277	35
3	24	64	123	201	299	415	550	704	877	1147	1281	36
4	25	65	124	203	300	417	552	707	880	1148	1284	37
4	25	66	126	204	302	419	555	709	883	1149	1288	38
4	26	67	127	206	304	421	557	712	886	1150	1292	39
4	26	68	128	207	306	423	559	715	889	1151	1295	40
4	27	68	129	209	307	425	562	718	892	1152	1299	41
5	28	69	130	210	309	427	564	720	895	1153	1303	42
5	28	70	131	212	311	429	567	723	898	1154	1307	43
5	29	71	133	213	313	432	569	726	902	1155	1310	44
5	29	72	134	215	315	434	572	729	906	1156	1314	45
5	30	73	135	216	316	436	574	732	908	1157	1318	46
5	30	74	136	218	318	438	577	734	911	1158	1321	47
5	31	75	137	219	320	440	579	737	914	1159	1325	48
6	31	75	139	221	322	442	582	740	917	1160	1329	49
6	32	76	140	222	324	444	584	743	920	1161	1333	50
7	33	77	141	225	326	447	587	745	923	1162	1336	51
7	33	78	142	226	328	449	589	748	927	1163	1340	52
7	34	79	144	227	330	451	592	751	930	1164	1344	53
7	34	80	145	229	331	453	594	754	933	1165	1348	54
8	35	81	146	230	333	455	597	757	936	1166	1352	55
8	36	82	147	232	336	458	599	760	939	1167	1355	56
8	36	83	149	233	337	460	602	763	942	1168	1359	57
8	37	84	150	235	339	462	604	765	945	1169	1363	58
9	37	85	151	236	341	464	607	768	949	1170	1367	59
10	38	86	152	238	343	466	609	771	952	1171	1370	60

Natural Versines to Seconds of Time

(r.)

sec.	12"	13"	14"	15"	16"	17"	18"	19"	20"	21"	22"	23"	sec.
0	1370	1608	1865	2141	2436	2750	3083	3434	3805	4196	4604	5031	0
1	1374	1612	1870	2146	2441	2755	3088	3441	3811	4202	4611	5039	1
2	1378	1617	1874	2151	2446	2761	3093	3447	3818	4208	4618	5046	2
3	1382	1621	1879	2155	2451	2766	3099	3453	3824	4215	4625	5053	3
4	1386	1625	1883	2160	2456	2771	3106	3459	3831	4222	4632	5061	4
5	1390	1629	1887	2165	2461	2777	3111	3465	3837	4228	4639	5068	5
6	1393	1633	1892	2170	2466	2782	3117	3471	3843	4235	4646	5075	6
7	1397	1637	1896	2175	2472	2788	3123	3477	3850	4242	4653	5083	7
8	1401	1641	1901	2179	2477	2793	3128	3483	3856	4248	4660	5090	8
9	1405	1646	1905	2184	2482	2799	3134	3489	3862	4255	4667	5097	9
10	1409	1650	1910	2189	2487	2804	3140	3495	3869	4262	4674	5105	10
11	1413	1654	1914	2194	2492	2809	3146	3501	3875	4269	4681	5112	11
12	1416	1658	1919	2199	2497	2815	3151	3507	3882	4275	4688	5119	12
13	1420	1662	1923	2203	2502	2820	3157	3513	3888	4282	4695	5127	13
14	1424	1667	1928	2208	2507	2826	3163	3519	3895	4289	4702	5134	14
15	1428	1671	1932	2213	2513	2831	3169	3525	3901	4295	4709	5141	15
16	1432	1675	1937	2218	2518	2837	3175	3531	3907	4302	4716	5148	16
17	1436	1679	1941	2223	2523	2843	3180	3538	3914	4309	4723	5156	17
18	1440	1683	1946	2227	2528	2848	3186	3544	3920	4316	4730	5163	18
19	1444	1688	1950	2232	2533	2853	3192	3550	3927	4322	4737	5171	19
20	1448	1692	1955	2237	2538	2859	3198	3556	3933	4329	4744	5178	20
21	1451	1696	1960	2242	2544	2864	3204	3562	3940	4335	4751	5186	21
22	1455	1700	1964	2247	2549	2870	3209	3568	3946	4343	4758	5193	22
23	1459	1705	1968	2252	2554	2875	3215	3574	3952	4350	4766	5200	23
24	1463	1709	1973	2257	2559	2881	3221	3580	3959	4356	4773	5208	24
25	1467	1713	1978	2262	2564	2886	3227	3587	3965	4363	4780	5215	25
26	1471	1717	1982	2266	2570	2892	3233	3593	3972	4370	4787	5223	26
27	1475	1722	1987	2272	2575	2897	3239	3599	3978	4377	4794	5230	27
28	1479	1726	1992	2276	2580	2903	3244	3605	3985	4383	4801	5237	28
29	1483	1730	1997	2281	2585	2908	3250	3611	3991	4390	4808	5245	29
30	1487	1734	2001	2286	2590	2914	3256	3618	3998	4397	4815	5252	30
31	1491	1739	2006	2291	2596	2919	3262	3624	4004	4404	4822	5260	31
32	1495	1743	2010	2296	2601	2925	3268	3630	4011	4411	4829	5267	32
33	1499	1747	2014	2301	2606	2930	3274	3636	4017	4418	4837	5275	33
34	1503	1751	2019	2306	2611	2936	3280	3642	4024	4424	4844	5282	34
35	1507	1756	2024	2311	2617	2942	3286	3648	4030	4431	4851	5290	35
36	1511	1760	2028	2316	2622	2947	3291	3655	4037	4438	4858	5297	36
37	1515	1764	2033	2321	2627	2952	3297	3661	4043	4445	4865	5305	37
38	1519	1769	2038	2326	2632	2958	3303	3667	4050	4452	4872	5312	38
39	1523	1773	2042	2331	2638	2964	3309	3673	4056	4459	4880	5320	39
40	1527	1777	2047	2335	2643	2970	3315	3680	4062	4465	4887	5327	40
41	1531	1782	2052	2340	2648	2975	3321	3686	4070	4472	4894	5335	41
42	1535	1786	2056	2345	2654	2981	3327	3692	4076	4479	4901	5342	42
43	1539	1790	2061	2350	2659	2986	3333	3698	4083	4486	4908	5350	43
44	1543	1795	2066	2355	2664	2992	3339	3705	4089	4493	4916	5357	44
45	1547	1799	2070	2360	2669	2998	3345	3711	4096	4500	4923	5365	45
46	1551	1804	2075	2365	2675	3003	3351	3717	4102	4507	4930	5372	46
47	1555	1808	2080	2370	2680	3009	3357	3723	4109	4514	4937	5380	47
48	1559	1812	2084	2375	2685	3015	3363	3730	4116	4520	4944	5387	48
49	1563	1817	2089	2380	2691	3020	3369	3736	4122	4527	4952	5395	49
50	1567	1821	2094	2385	2696	3026	3375	3742	4129	4534	4959	5402	50
51	1571	1825	2099	2390	2701	3031	3380	3749	4136	4541	4966	5410	51
52	1575	1830	2103	2395	2707	3037	3386	3755	4142	4548	4973	5417	52
53	1580	1834	2108	2401	2712	3043	3392	3761	4149	4555	4981	5425	53
54	1584	1839	2113	2406	2718	3049	3398	3767	4156	4562	4988	5433	54
55	1588	1843	2117	2411	2723	3054	3404	3774	4162	4569	4995	5440	55
56	1592	1847	2122	2416	2728	3060	3410	3780	4168	4576	5002	5448	56
57	1596	1852	2127	2421	2734	3066	3416	3786	4175	4583	5010	5455	57
58	1600	1856	2132	2426	2739	3071	3422	3793	4182	4590	5017	5463	58
59	1604	1861	2136	2431	2744	3077	3428	3799	4188	4597	5024	5470	59
60	1608	1865	2141	2436	2750	3083	3434	3805	4195	4604	5031	5478	60

Natural Verses to Seconds of Time.

(v.)

24"	25"	26"	27"	28"	29"	30"	31"	32"	33"	34"	35"	sec.
5478	5944	6428	6931	7454	7995	8555	9134	9732	10349	10984	11638	0
5486	5952	6436	6940	7463	8004	8564	9144	9742	10360	10995	11649	1
5494	5960	6445	6949	7472	8013	8574	9154	9752	10369	11006	11661	2
5501	5967	6453	6957	7481	8023	8583	9164	9762	10379	11016	11672	3
5509	5975	6461	6966	7489	8032	8593	9173	9772	10390	11027	11683	4
5516	5983	6469	6974	7498	8041	8601	9183	9782	10400	11038	11694	5
5524	5991	6478	6983	7507	8050	8612	9193	9793	10411	11049	11705	6
5531	5999	6486	6991	7516	8059	8621	9203	9803	10421	11059	11716	7
5539	6007	6494	7000	7525	8069	8631	9213	9813	10432	11070	11727	8
5547	6015	6502	7009	7534	8078	8641	9223	9823	10442	11081	11738	9
5554	6023	6511	7017	7543	8087	8650	9232	9833	10453	11092	11749	10
5562	6031	6519	7026	7552	8096	8659	9242	9843	10463	11102	11760	11
5570	6039	6527	7034	7561	8106	8669	9252	9854	10474	11114	11772	12
5577	6047	6536	7043	7570	8115	8679	9262	9864	10484	11124	11783	13
5585	6055	6544	7052	7579	8124	8689	9272	9874	10495	11135	11794	14
5593	6063	6551	7060	7587	8133	8699	9282	9884	10505	11146	11805	15
5600	6071	6560	7069	7596	8143	8708	9292	9895	10516	11157	11816	16
5608	6079	6569	7078	7605	8152	8717	9301	9905	10526	11167	11827	17
5616	6087	6577	7086	7614	8161	8727	9311	9915	10537	11178	11838	18
5623	6095	6585	7095	7623	8170	8736	9321	9925	10547	11189	11849	19
5631	6103	6594	7103	7632	8180	8746	9331	9935	10558	11200	11861	20
5639	6111	6602	7112	7641	8189	8755	9341	9946	10568	11211	11872	21
5647	6119	6610	7121	7650	8198	8765	9351	9956	10579	11222	11883	22
5654	6127	6619	7130	7659	8207	8774	9361	9966	10590	11233	11894	23
5662	6135	6627	7138	7668	8217	8784	9371	9976	10601	11244	11906	24
5670	6143	6636	7147	7677	8226	8794	9381	9986	10611	11254	11917	25
5678	6151	6644	7156	7686	8235	8804	9391	9997	10622	11265	11928	26
5685	6159	6652	7164	7695	8245	8813	9401	10007	10632	11276	11939	27
5693	6167	6661	7173	7704	8254	8823	9411	10017	10643	11287	11950	28
5701	6175	6669	7182	7713	8263	8832	9421	10027	10653	11298	11961	29
5709	6183	6678	7190	7722	8273	8842	9431	10038	10664	11309	11972	30
5716	6192	6686	7199	7731	8282	8852	9441	10048	10674	11320	11984	31
5724	6200	6694	7208	7740	8291	8862	9451	10058	10685	11331	11995	32
5732	6208	6703	7217	7749	8301	8872	9461	10068	10695	11342	12006	33
5740	6216	6711	7226	7758	8310	8881	9471	10079	10706	11353	12018	34
5747	6224	6719	7234	7767	8319	8891	9481	10089	10716	11364	12029	35
5755	6232	6728	7243	7776	8329	8900	9491	10100	10728	11374	12040	36
5763	6240	6736	7251	7785	8338	8910	9501	10110	10738	11385	12051	37
5771	6248	6745	7260	7794	8348	8920	9511	10120	10749	11396	12062	38
5779	6256	6753	7269	7804	8357	8930	9521	10130	10759	11407	12074	39
5786	6264	6762	7278	7813	8366	8939	9531	10141	10770	11418	12085	40
5794	6273	6770	7286	7822	8376	8949	9541	10151	10781	11429	12096	41
5802	6281	6778	7295	7831	8385	8958	9551	10162	10792	11440	12108	42
5810	6289	6787	7304	7840	8394	8968	9561	10172	10802	11452	12119	43
5818	6297	6795	7313	7849	8404	8978	9571	10182	10813	11462	12130	44
5826	6305	6804	7321	7858	8413	8988	9581	10192	10823	11473	12141	45
5833	6313	6812	7330	7867	8423	8997	9591	10203	10834	11484	12153	46
5841	6322	6821	7339	7876	8432	9007	9601	10213	10844	11495	12164	47
5849	6330	6829	7348	7885	8442	9017	9611	10224	10855	11506	12176	48
5857	6338	6838	7357	7894	8451	9027	9621	10234	10865	11517	12187	49
5865	6346	6846	7365	7903	8460	9036	9631	10245	10877	11528	12198	50
5873	6355	6855	7374	7913	8470	9046	9641	10255	10887	11539	12209	51
5881	6362	6863	7383	7922	8479	9056	9651	10265	10898	11550	12221	52
5888	6371	6872	7392	7931	8489	9066	9661	10275	10909	11561	12232	53
5896	6379	6880	7401	7940	8498	9075	9671	10286	10920	11572	12243	54
5904	6387	6889	7410	7949	8508	9085	9681	10296	10930	11583	12254	55
5912	6395	6897	7418	7958	8517	9095	9691	10307	10941	11594	12265	56
5920	6403	6906	7427	7968	8527	9105	9701	10317	10952	11605	12277	57
5928	6411	6914	7436	7977	8536	9114	9712	10328	10963	11616	12289	58
5936	6420	6923	7445	7986	8546	9124	9722	10338	10973	11627	12300	59
5944	6428	6931	7454	7995	8555	9134	9732	10349	10984	11638	12312	60

Nat. Versines.

	0°	1°	2°	3°	4°	5°	6°	7°	8°
0	000000	0000152	0000609	0001370	0002436	0003805	0005478	0007454	0009732
1	000000	0000157	0000619	0001386	0002456	0003831	0005509	0007489	0009772
2	000000	00103	000630	01401	02477	03856	05539	07525	09813
3	000000	00168	000640	01416	02497	03882	05570	07561	09854
4	0000001	0000173	0000650	0001432	0002518	0003907	0005600	0007596	0009894
5	000001	000179	000601	01448	02538	03933	05631	07632	09935
6	000001	00184	00072	01463	02559	03959	05662	07668	09976
7	0000002	0000180	0000682	0001479	0002580	0003985	0005693	0007704	0010017
8	000003	00196	000693	01496	02601	04011	05724	07740	10058
9	000003	00201	00704	01511	02622	04037	05755	07776	10100
10	0000004	0000207	0000715	0001527	0002643	0004063	0005788	0007813	0010141
11	000005	00213	00726	01543	02664	04089	05818	07849	10182
12	000005	00219	00737	01559	02685	04116	05849	07885	10224
13	0000007	0000226	0000748	0001675	0002707	0004142	0005880	0007922	0010265
14	000008	00232	00750	01592	02728	04168	05912	07958	10307
15	000009	00238	00771	01608	02750	04195	05944	07996	10349
16	0000011	0000244	0000782	0001625	0002771	0004222	0005975	0008032	0010390
17	000012	00251	00794	01641	02793	04248	06007	08069	10432
18	000014	00257	00806	01658	02815	04275	06039	08106	10474
19	0000015	0000264	0000817	0001675	0002837	0004302	0006071	0008143	0010517
20	000017	00271	00829	01692	02859	04329	06103	08180	10558
21	000019	00278	00841	01709	02881	04356	06135	08217	10601
22	0000020	0000284	0000853	0001726	0002903	0004383	0006167	0008254	0010643
23	000022	00291	00865	01743	02925	04411	06200	08291	10685
24	000024	00299	00877	01760	02947	04438	06232	08329	10728
25	0000026	0000306	0000889	0001777	0002970	0004465	0006264	0008366	0010770
26	000029	00313	00902	01795	02992	04493	06297	08404	10813
27	000031		00914	01812	03015	04520	06330	08442	10855
28	0000033	0000318	0000927	0001830	0003037	0004548	0006362	0008479	0010898
29	000036	00335	00939	01847	03060	04576	06396	08517	10941
30	000038	00343	00952	01863	03083	04604	06428	08555	10984
31	0000041	0000350	0000964	0001883	0003105	0004632	0006461	0008593	0011027
32	000043	00358	00977	01901	03128	04660	06494	08631	11070
33	000046	00366	00990	01919	03151	04688	06527	08669	11113
34	0000049	0000374	0001003	0001937	0003175	0004716	0006560	0008708	0011157
35	000052	00382	01016	01955	03198	04744	06594	08746	11200
36	000055	00390	01029	01973	03221	04773	06627	08784	11244
37	0000058	0000388	0001043	0001992	0003244	0004801	0006661	0008823	0011287
38	000061	00406	01056	02010	03268	04829	06694	08862	11331
39	000064	00413	01069	02028	03291	04858	06728	08900	11374
40	0000069	0000423	0001083	0002047	0003315	0004887	0006762	0008930	0011418
41	000071	00432	01096	02066	03339	04916	06795	08978	11462
42	000073	00440	01110	02084	03363	04944	06829	09017	11506
43	0000078	0000449	0001124	0002103	0003386	0004973	0006883	0009056	0011550
44	000082	00468	01138	02122	03410	05002	06917	09095	11594
45	000086	00468	01152	02141	03434	05031	06931	09134	11638
46	0000089	0000475	0001166	0002160	0003459	0005061	0006966	0009173	0011683
47	000093	00484	01180	02179	03483	05090	07000	09213	11727
48	000097	00493	01194	02198	03507	05119	07034	09252	11772
49	0000102	0000503	0001208	0002218	0003531	0005149	0007069	0009292	0011816
50	00108	00512	01222	02237	03556	05178	07103	09331	11861
51	00110	00521	01237	02257	03580	05208	07138	09371	11905
52	0000114	0000531	0001251	0002276	0003605	0005237	0007173	0009411	0011950
53	00119	00540	01266	02296	03630	05267	07208	09451	11995
54	00123	00550	01281	02316	03655	05297	07243	09490	12040
55	0000128	0000559	0001295	0002335	0003680	0005327	0007278	0009531	0012085
56	00133	00569	01310	02355	03705	05357	07313	09571	12130
57	00137	00579	01326	02375	03730	05387	07348	09611	12175
58	0000142	0000589	0001340	0002395	0003755	0005417	0007383	0009651	0012221
59	00147	00599	01355	02416	03780	05448	07418	09691	12266
60	00152	00609	01370	02436	03805	05478	07454	09732	12312

Parts for Seconds.

(v.)

[illegible]

Nat. Versines.

(v.)

	10°	11°	12°	13°	14°	15°	16°	17°	18°	19°	
0	0015192	0018173	0021852	0025630	0029704	0034074	0038738	0043695	0048943	0054481	0
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2	15293	18184	21973	25761	29845	34226	38899	43865	49123	54671	2
3	15344	18540	22034	25827	29918	34300	38979	43951	49213	54766	3
4	0015395	0018595	0022095	0025892	0029986	0034376	0039000	0044036	0049304	0054861	4
5	15446	18651	22156	25958	30057	34452	39140	44121	49394	54956	5
6	15497	18707	22217	26024	30128	34527	39221	44207	49484	55051	6
7	0015548	0018763	0022278	0026090	0030190	0034588	0039302	0044293	0049575	0055146	7
8	15599	18819	22339	26156	30270	34679	39382	44378	49685	55242	8
9	15650	18876	22400	26222	30341	34755	39463	44464	49760	55337	9
10	0015701	0018932	0022461	0026288	0030412	0034831	0039544	0044560	0049846	0055432	10
11	15753	18988	22523	26354	30483	34907	39625	44638	49937	55538	11
12	15804	19045	22584	26421	30555	34983	39706	44722	50028	55624	12
13	0015856	0019101	0022646	0026488	0030626	0035048	0039787	0044808	0050119	0055719	13
14	15908	19158	22707	26554	30697	35136	39869	44894	50210	55815	14
15	15959	19215	22769	26621	30769	35213	39950	44980	50301	55911	15
16	0016011	0019271	0022831	0026687	0030811	0035239	0040032	0045066	0050392	0056007	16
17	16063	19328	22892	26754	30912	35366	40113	45163	50483	56103	17
18	16115	19385	22954	26821	30984	35443	40195	45239	50574	56199	18
19	0016167	0019442	0023016	0026889	0031055	0035519	0040276	0045326	0050606	0056295	19
20	16219	19499	23078	26955	31128	35596	40358	45412	50757	56391	20
21	16271	19567	23141	27022	31200	35673	40440	45499	50849	56488	21
22	0016324	0019614	0023203	0027089	0031272	0035750	0040522	0045586	0050940	0056584	22
23	16376	19671	23265	27157	31344	35827	40604	45673	51032	56681	23
24	16428	19729	23328	27224	31417	35905	40686	45760	51124	56777	24
25	0016481	0019766	0023390	0027292	0031489	0035982	0040768	0045847	0051216	0056874	25
26	16534	19844	23453	27359	31562	36059	40850	45934	51309	56971	26
27	16586	19902	23515	27427	31634	36137	40933	46021	51400	57068	27
28	0016639	0019959	0023579	0027494	0031707	0036214	0041015	0046108	0051492	0057164	28
29	16692	20017	23641	27562	31780	36292	41098	46196	51584	57261	29
30	16745	20075	23704	27630	31852	36369	41180	46283	51676	57358	30
31	0016798	0020133	0023767	0027698	0031925	0036447	0041263	0046371	0051769	0057456	31
32	16851	20191	23830	27766	31998	36525	41346	46458	51861	57553	32
33	16904	20250	23893	27834	32071	36603	41428	46546	51954	57650	33
34	0016958	0020309	0023956	0027902	0032144	0036681	0041511	0046634	0052046	0057747	34
35	17011	20368	24020	27971	32217	36759	41594	46721	52139	57845	35
36	17065	20426	24083	28039	32291	36837	41677	46809	52232	57942	36
37	0017118	0020483	0024147	0028107	0032304	0036916	0041761	0046897	0052324	0058040	37
38	17172	20542	24210	28176	32378	36994	41844	46985	52417	58138	38
39	17226	20601	24274	28245	32451	37072	41927	47074	52510	58236	39
40	0017279	0020659	0024338	0028313	0032585	0037161	0042010	0047162	0052603	0058333	40
41	17333	20718	24401	28382	32658	37239	42094	47250	52696	58431	41
42	17387	20777	24465	28451	32732	37308	42177	47338	52790	58529	42
43	0017441	0020836	0024529	0028590	0032806	0037387	0042261	0047427	0052883	0058628	43
44	17495	20895	24593	28659	32880	37466	42345	47516	52976	58726	44
45	17550	20954	24658	28728	32954	37545	42429	47604	53070	58824	45
46	0017604	0021014	0024722	0028727	0033028	0037624	0042512	0047683	0053163	0058922	46
47	17658	21073	24786	28796	33102	37703	42596	47769	53257	59021	47
48	17713	21133	24851	28866	33177	37782	42680	47871	53361	59119	48
49	0017767	0021192	0024915	0028935	0033251	0037861	0042765	0047960	0053444	0059218	49
50	17822	21252	24980	29005	33325	37941	42849	48049	53538	59316	50
51	17877	21311	25044	29074	33400	38020	42933	48138	53632	59415	51
52	0017931	0021371	0025109	0029144	0033474	0038099	0043017	0048227	0053726	0059514	52
53	17986	21431	25174	29214	33549	38179	43102	48316	53820	59613	53
54	18041	21491	25239	29283	33624	38259	43186	48406	53915	59712	54
55	0018096	0021531	0025304	0029353	0033609	0038338	0043271	0048495	0054009	0059811	55
56	18151	21591	25369	29423	33774	38418	43356	48585	54103	59910	56
57	18207	21671	25434	29493	33849	38498	43440	48674	54198	60009	57
58	0018262	0021732	0025499	0029564	0033924	0038658	0043525	0048764	0054292	0060109	58
59	18317	21792	25564	29634	33999	38658	43610	48854	54387	60208	59
60	18373	21852	25630	29704	34074	38738	43695	48943	54481	60307	60

Parts for Seconds.

(v.)

	10°		11°		12°		13°		14°		15°		16°		17°		18°		19°		20°	
	0'	30"	0'	30"	0'	30"	0'	30"	0'	30"	0'	30"	0'	30"	0'	30"	0'	30"	0'	30"	0'	30"
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3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	4	4	4	4	3
4	4	4	4	4	4	4	4	5	5	5	5	5	5	5	5	5	6	6	6	6	4	
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Nat. Versines.

(v.)

	20°	21°	22°	23°	24°	25°	26°	27°	28°	29°	
0	0070307	0066420	0072816	0079496	0086454	0093692	0101206	0108993	0117052	0125380	6
1	0060407	0066624	0072925	0079609	0086573	0093815	0101333	0109126	0117189	0125521	1
2	60506	66628	73034	79723	86691	93930	01461	09258	17326	25662	2
3	60606	66733	73143	79836	86810	94061	01589	09390	17462	25804	3
4	0060706	0066837	0073253	0079950	0086928	0094186	0101717	0109622	0117599	0125945	4
5	60806	66942	73362	80064	87047	94308	01844	09656	17736	26066	5
6	60906	67046	73471	80178	87166	94431	01972	09787	17873	26228	6
7	0061006	0067151	0073581	0080293	0087285	0094555	0102100	0109920	0118016	0126360	7
8	61106	67256	73690	80407	87403	94678	02228	10052	18147	26511	8
9	61206	67361	73800	80521	87522	94802	02357	10185	18284	26652	9
10	0061306	0067466	0073910	0080636	0087642	0094925	0102485	0110318	0118422	0126794	10
11	61407	67571	74019	80750	87781	95049	02613	10451	18569	26936	11
12	61507	67676	74129	80865	87880	95173	02742	10684	18696	27078	12
13	0061607	0067781	0074239	0080979	0087999	0095297	0102870	0110717	0118834	0127220	13
14	61708	67887	74349	81094	88118	95421	02999	10850	18972	27362	14
15	61809	67992	74469	81209	88238	95545	03127	10983	19109	27504	15
16	0061909	0068098	0074570	0081324	0088357	0095660	0103256	0111116	0119247	0127646	16
17	62010	68203	74680	81439	88477	95793	03385	11249	19385	27788	17
18	62111	68309	74790	81554	88597	95917	03514	11383	19523	27931	18
19	0062212	0068414	0074901	0081689	0088716	0096042	0103642	0111516	0119661	0128073	19
20	62313	68520	75011	81784	88836	96168	03771	11650	19799	28216	20
21	62414	68626	75122	81899	88956	96291	03901	11783	19937	28358	21
22	0062515	0068732	0075232	0082014	0089076	0096415	0104090	0111917	0120075	0128501	22
23	62617	68838	75343	82130	89196	96540	04159	12051	20213	28643	23
24	62718	68944	75454	82245	89316	96665	04288	12185	20351	28786	24
25	0062819	0069050	0075566	0082361	0089436	0096789	0104418	0112318	0120490	0128929	25
26	62921	69157	75678	82477	89557	96914	04547	12452	20620	29072	26
27	63023	69263	75787	82592	89677	97039	04677	12587	20767	29215	27
28	0063124	0069360	0075898	0082708	0089798	0097164	0104808	0112721	0120905	0129358	28
29	63226	69476	76009	82824	89918	97289	04936	12855	21044	29501	29
30	63328	69582	76120	82940	90039	97415	05068	12989	21183	29644	30
31	0063430	0069689	0076232	0083056	0090159	0097540	0105195	0113123	0121322	0129768	31
32	63532	69796	76343	83172	90280	97665	05325	13258	21461	29913	32
33	63634	69903	76455	83288	90391	97791	05455	13392	21600	30074	33
34	0063736	0069999	0076566	0083404	0090522	0097916	0105585	0113527	0121730	0130218	34
35	63838	70116	76678	83521	90643	98042	05716	13662	21878	30361	35
36	63940	70223	76790	83637	90764	98167	05846	13796	22017	30505	36
37	0064043	0070331	0076902	0083754	0090885	0098293	0105978	0113931	0122166	0130649	37
38	64145	70438	77013	83870	91006	98419	06106	14066	22296	30793	38
39	64248	70545	77125	83987	91127	98545	06237	14201	22435	30936	39
40	0064350	0070652	0077238	0084104	0091249	0098671	0106367	0114396	0122575	0131080	40
41	64453	70760	77350	84220	91370	98797	06498	14471	22714	31224	41
42	64556	70867	77462	84337	91492	98923	06629	14606	22854	31368	42
43	0064659	0070975	0077574	0084454	0091613	0099049	0106759	0114742	0122994	0131513	43
44	64762	71083	77687	84571	91735	99175	06890	14877	23133	31657	44
45	64865	71190	77799	84688	91857	99302	07021	15012	23273	31801	45
46	0064968	0071298	0077912	0084806	0091979	0099428	0107152	0115148	0123413	0131946	46
47	65071	71406	78024	84923	92100	99555	07283	15283	23563	32090	47
48	65174	71514	78137	85040	92222	99681	07414	15419	23693	32234	48
49	0065278	0071622	0078250	0085158	0092345	0099808	0107545	0115555	0123633	0132379	49
50	65381	71730	78362	85275	92467	99935	07677	15690	23874	32524	50
51	65485	71839	78475	85393	92589	100061	07808	15826	24114	32669	51
52	0065588	0071947	0078580	0085510	0092711	0100188	0107939	0115962	0124254	0132813	52
53	65692	72055	78701	85628	92833	00315	08071	16098	24395	32958	53
54	65795	72164	78815	85746	92956	00442	08202	16234	24535	33103	54
55	0065899	0072272	0078928	0085864	0093078	0100569	0108334	0116370	0124676	0133248	55
56	66003	72381	79041	85982	93201	00696	08466	16507	24817	33393	56
57	66107	72490	79154	86100	93324	00824	08598	16643	24957	33539	57
58	0066211	0072598	0079268	0086218	0093446	0100951	0108729	0116779	0125098	0133684	58
59	66315	72707	79381	86336	93569	01078	08861	16916	25239	33829	59
60	66420	72816	79495	86454	93692	01206	08993	17052	25380	33975	60

Parts for Seconds.

(v.)

	20°		21°		22°		23°		24°		25°		26°		27°		28°		29°		30°	
	0'	30"	0'	30"	0'	30"	0'	30"	0'	30"	0'	30"	0'	30"	0'	30"	0'	30"	0'	30"	0'	"
1	1	2	2	3	2	3	2	3	2	3	2	3	2	3	2	3	2	3	2	3	2	1
2	3	3	3	4	4	4	4	4	4	4	4	4	4	4	4	5	5	5	5	5	5	2
3	5	5	5	5	5	6	6	6	6	6	6	6	6	6	7	7	7	7	7	7	7	3
4	7	7	7	7	7	7	8	8	8	8	8	8	8	9	9	9	9	9	9	10	10	4
5	8	8	8	8	8	9	9	9	9	10	10	10	10	11	11	11	11	11	12	12	12	5
6	10	10	10	11	11	11	11	12	12	12	12	13	13	13	13	13	14	14	14	14	15	6
7	12	12	12	13	13	13	13	14	14	14	14	15	15	15	15	16	16	16	16	17	17	7
8	13	14	14	14	15	15	15	16	16	16	17	17	17	17	18	18	18	19	19	19	19	8
9	15	15	15	16	16	17	17	17	18	18	18	19	19	19	20	20	20	21	21	21	22	9
10	17	17	17	18	18	19	19	19	20	20	20	21	21	22	22	22	23	23	24	24	24	10
11	18	19	19	20	20	21	21	22	22	23	23	23	24	24	25	25	25	26	26	26	27	11
12	20	20	21	21	22	22	23	23	24	24	25	25	26	26	27	27	28	28	29	29	29	12
13	22	22	23	23	24	24	25	25	26	26	27	27	28	28	29	29	30	30	31	31	32	13
14	23	24	24	25	25	26	27	27	28	28	29	29	30	30	31	31	32	32	33	33	34	14
15	25	25	26	27	27	28	28	29	30	30	31	31	32	32	33	34	34	35	36	36	36	15
16	27	27	28	28	29	30	30	31	32	32	33	33	34	35	35	36	36	37	38	38	39	16
17	28	29	30	30	31	32	32	33	34	34	35	35	36	37	37	38	39	39	40	41	41	17
18	30	31	31	32	33	33	34	35	35	36	37	38	38	39	40	40	41	42	42	43	44	18
19	32	32	33	34	35	35	36	37	37	38	39	40	40	41	42	43	43	44	45	46	46	19
20	33	34	35	35	36	37	38	39	40	41	42	42	43	44	44	45	46	46	47	48	48	20
21	35	36	36	37	38	39	40	41	41	42	43	44	45	45	46	47	48	49	49	50	51	21
22	36	37	38	39	40	41	42	43	43	44	45	46	47	48	48	49	50	51	52	53	53	22
23	38	39	40	41	42	43	44	44	45	46	47	48	49	50	51	51	52	53	54	55	56	23
24	40	41	42	43	44	45	46	47	48	49	50	51	52	52	53	54	55	56	57	58	58	24
25	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	25
26	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	26
27	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	27
28	46	48	48	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	28
29	48	49	50	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	29
30	50	51	52	53	55	56	57	58	59	60	61	63	64	65	66	67	68	69	71	72	73	30
31	51	53	54	55	56	58	59	60	61	62	64	65	66	67	68	69	71	72	73	74	75	31
32	53	54	56	57	58	59	61	62	63	64	66	67	68	69	70	72	73	74	75	76	78	32
33	55	56	57	59	60	61	63	64	65	66	68	69	70	71	73	74	75	76	78	79	80	33
34	56	58	59	60	62	63	64	66	67	68	70	71	72	74	75	76	77	79	80	81	82	34
35	58	59	61	62	63	65	66	68	69	70	72	73	74	76	77	78	80	81	82	84	85	35
36	60	61	63	64	65	67	68	70	71	72	74	75	76	78	79	81	82	83	85	86	87	36
37	61	63	64	66	67	69	70	72	73	74	76	77	79	80	81	83	84	86	87	88	90	37
38	63	65	66	68	69	70	72	73	75	76	78	79	81	82	84	85	86	88	89	91	92	38
39	65	66	68	69	71	72	74	75	77	78	80	81	83	84	86	87	89	90	92	93	95	39
40	66	68	70	71	73	74	76	77	79	80	82	83	85	86	87	89	90	91	93	95	97	40
41	68	70	71	73	74	76	78	79	81	82	84	85	87	89	90	92	93	95	96	98	99	41
42	70	71	73	75	76	78	80	81	83	84	86	88	89	91	92	94	96	97	99	100	102	42
43	71	73	74	76	78	80	81	83	85	86	88	90	91	93	95	96	98	99	101	103	104	43
44	73	75	76	78	80	82	83	85	87	88	90	92	93	95	97	98	100	102	103	105	107	44
45	75	76	78	80	82	83	85	87	89	90	92	94	96	97	99	101	102	104	106	107	109	45
46	77	78	80	82	84	85	87	89	91	92	94	96	98	100	101	103	105	106	108	110	112	46
47	78	80	82	84	86	87	89	91	93	95	96	98	100	102	103	105	107	109	110	112	114	47
48	80	81	83	85	87	89	91	93	95	97	98	100	102	104	106	107	109	111	113	115	116	48
49	81	83	85	87	89	91	93	95	97	99	100	102	104	106	108	110	112	113	115	117	119	49
50	83	85	87	89	91	93	95	97	99	101	102	104	106	108	110	112	114	116	118	119	121	50
51	85	87	89	91	93	95	97	99	101	103	105	106	108	110	112	114	116	118	120	122	124	51
52	86	88	90	92	94	96	98	101	103	105	107	109	110	112	114	116	118	120	122	124	126	52
53	88	90	92	94	96	98	100	102	105	107	109	111	113	115	117	119	121	123	125	127	128	53
54	90	92	94	96	98	100	102	104	106	109	111	113	115	117	119	121	123	125	127	129	131	54
55	91	93	96	98	100	102	104	106	108	111	113	115	117	119	121	123	125	127	129	131	133	55
56	93	95	97	99	102	104	106	108	110	113	115	117	119	121	123	125	127	130	132	134	136	56
57	95	97	99	101	104	106	108	110	112	115	117	119	121	123	125	128	130	132	134	136	138	57
58	96	98	101	103	105	108	110	112	114	117	119	121	123	125	128	130	132	134	136	138	141	58
59	98	100	103	105	107	109	112	114	116	119	121	123	125	128	130	131	134	137	139	141	143	59
60	99	102	104	107	109	111	114	116	118	121	123	125	127	130	132	134	136	139	141	143	145	60

Nat. Versines.

(v.)

	30°	31°	32°	33°	34°	35°	36°	37°	38°	39°	
0	0133975	0142833	0151952	0161329	0170962	0180848	0190983	0201364	0211989	0222854	0
1	0134120	0142983	0152106	0161488	0171125	0181015	0191154	0201540	0212168	0223037	1
2	34208	43132	52260	61648	71288	81182	91325	01715	12348	23220	2
3	34411	43292	52415	61805	71451	81349	91496	01890	12527	23463	3
4	0134657	0143433	0152569	0161964	0171614	0181516	0191667	0202065	0212706	0223587	4
5	34703	43583	52723	62122	71777	81683	91839	02241	12885	23770	5
6	34849	43733	52878	62281	71940	81850	92010	02241	13065	23954	6
7	0134994	0143863	0153033	0162440	0172103	0182018	0192181	0202592	0213244	0224137	7
8	35140	44034	53187	62590	72208	82185	92353	023767	13424	24321	8
9	35287	44184	53342	62758	72429	82362	92525	02943	13604	24504	9
10	0135433	0144334	0153497	0162917	0172593	0182520	0192696	0203119	0213783	0224688	10
11	35579	44485	53652	63076	72750	82687	92868	03394	13963	24872	11
12	35725	44636	53807	63236	72919	82855	93040	03470	14143	25065	12
13	0135872	0144786	0153962	0163395	0173083	0183023	0193211	0203646	0214323	0225239	13
14	36018	44937	54117	63554	73247	83191	93383	03822	14683	25423	14
15	36164	45088	54272	63714	73410	83358	93555	03988	14883	25607	15
16	0136311	0145230	0154427	0163873	0173574	0183526	0193727	0204174	0214863	0225791	16
17	36458	45390	54583	64033	73738	83694	93899	04350	15043	25976	17
18	36604	45541	54738	64193	73902	83850	94072	04526	15224	26180	18
19	0136751	0145692	0154894	0164352	0174066	0184030	0194244	0204703	0215404	0226344	19
20	36898	45844	55049	64512	74230	84199	94416	04879	15584	26528	20
21	37045	45995	55205	64672	74394	84367	94589	05056	15765	26713	21
22	0137192	0146146	0155360	0164832	0174558	0184535	0194761	0205232	0215945	0226897	22
23	37339	46298	55516	64992	74722	84704	94934	05409	16126	27082	23
24	37486	46449	55672	65152	74886	84872	95106	05585	16306	27266	24
25	0137634	0146601	0155828	0165319	0175051	0185041	0195279	0205762	0216487	0227451	25
26	37781	46753	55984	65473	75215	85209	95453	05939	16668	27636	26
27	37928	46904	56140	65633	75380	85378	95624	06116	16849	27821	27
28	0138076	0147050	0156296	0165793	0175544	0185547	0195797	0206293	0217030	0228005	28
29	38223	47208	56452	65954	75709	85716	95970	06470	17211	28199	29
30	38371	47360	56609	66114	75874	85881	96143	06647	17392	28375	30
31	0138518	0147512	0156765	0166275	0176039	0186053	0196316	0206824	0217573	0228569	31
32	38666	47664	56921	66435	76203	86222	96489	07001	17754	28745	32
33	38814	47816	57078	66596	76368	86392	96652	07178	17935	28931	33
34	0138962	0147960	0157234	0166757	0176533	0186561	0196836	0207365	0218117	0229116	34
35	39110	48121	57391	66918	76698	86730	97009	07533	18298	29301	35
36	39258	48273	57548	67079	76864	86899	97182	07710	18479	29487	36
37	0139406	0148425	0157794	0167240	0177029	0187069	0197356	0207888	0218661	0229672	37
38	39554	48578	57901	67401	77194	87238	97529	08065	18843	29858	38
39	39702	48731	58018	67562	77359	87407	97703	08243	19024	30043	39
40	0139850	0148883	0158175	0167723	0177525	0187577	0197877	0208421	0219206	0230229	40
41	39999	49030	58332	67884	77690	87747	98050	08599	19388	30415	41
42	40148	49189	58489	68046	77856	87916	98224	08776	19570	30600	42
43	0140296	0149342	0158646	0168207	0178022	0188086	0198398	0208954	0219751	0230786	43
44	40445	49495	58804	68369	78187	88256	98572	09132	19933	30972	44
45	40594	49648	58961	68530	78353	88426	98746	09310	20115	31158	45
46	0140742	0149801	0159118	0168692	0178519	0188596	0198920	0209488	0220298	0231344	46
47	40891	49954	59276	68854	78685	88766	99094	09667	20480	31530	47
48	41040	50107	59433	69015	78851	88936	99269	09845	20662	31716	48
49	0141189	0150261	0159591	0169177	0179017	0189106	0199443	0210023	0220844	0231903	49
50	41338	50414	59749	69339	79183	89277	99617	10202	21027	32089	50
51	41487	50567	59906	69501	79349	89447	99792	10380	21209	32275	51
52	0141636	0150721	0160064	0169663	0179515	0189617	0199866	0210559	0221392	0232461	52
53	41786	50875	60222	69825	79682	89788	200141	21574	22574	32648	53
54	41935	51028	60380	69988	79848	89958	00315	10918	21757	32835	54
55	0142084	0151182	0160538	0170160	0180015	0190129	0200490	0211095	0221940	0233021	55
56	42234	51336	60696	70312	80181	90300	00665	11273	22122	33208	56
57	42384	51490	60854	70475	80348	90470	00840	11452	22305	33395	57
58	0142533	0151644	0161013	0170637	0180514	0190641	0201014	0211631	0222488	0233582	58
59	42683	51798	61171	70800	80681	90812	01189	11810	22671	33780	59
60	42833	51952	61329	70902	80848	90983	01364	11989	22854	33956	60

Parts for Seconds.

(v.)

	30°		31°		32°		33°		34°		35°		36°		37°		38°		39°		40°	
	0'	30"	0'	30"	0'	30"	0'	30"	0'	30"	0'	30"	0'	30"	0'	30"	0'	30"	0'	30"	0'	30"
1	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
2	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	
3	7	7	7	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	
4	10	10	10	10	10	10	11	11	11	11	11	11	11	11	12	12	12	12	12	12	12	
5	12	12	12	13	13	13	13	13	14	14	14	14	14	14	15	15	15	15	15	15	15	
6	15	15	15	15	15	16	16	16	16	16	17	17	17	17	18	18	18	18	18	18	18	
7	17	17	17	18	18	18	18	19	19	19	19	20	20	20	20	21	21	21	21	22	22	
8	19	20	20	20	21	21	21	22	22	22	22	23	23	23	23	24	24	24	24	25	25	
9	22	22	22	23	23	23	24	24	24	25	25	25	26	26	26	27	27	27	27	28	28	
10	24	25	25	25	26	26	26	27	27	27	28	28	28	29	29	30	30	30	31	31	31	
11	27	27	27	28	28	29	29	29	30	30	31	31	31	32	32	32	33	33	34	34	34	
12	29	30	30	31	31	31	32	32	33	33	33	34	34	35	35	35	36	36	37	37	37	
13	32	32	32	33	33	34	34	36	36	36	37	37	37	37	38	38	39	39	40	40	40	
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16	39	39	40	41	41	42	42	43	44	44	45	45	46	46	47	47	48	48	49	49	50	
17	41	42	42	43	44	44	45	45	46	47	47	48	48	49	50	50	51	51	52	52	53	
18	44	44	45	46	46	47	48	48	49	49	50	51	51	52	53	53	54	54	55	56	56	
19	46	47	47	48	49	49	50	51	52	52	53	54	54	55	55	56	57	57	58	59	59	
20	48	49	50	51	51	52	53	54	55	55	56	57	57	58	58	59	60	60	61	62	62	
21	51	52	52	53	54	55	55	56	57	58	58	59	60	60	61	62	63	63	64	65	65	
22	53	54	55	56	57	57	58	59	60	60	61	62	63	63	64	65	66	67	68	69	69	
23	56	57	57	58	59	60	61	62	63	63	64	65	66	67	68	69	70	71	72	73	73	
24	58	59	60	61	62	63	63	64	65	66	67	68	68	69	70	71	72	73	74	75	75	
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27	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	84	
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32	78	79	80	81	82	83	85	86	87	88	89	90	91	92	93	94	96	97	98	99	100	
33	80	81	82	84	85	86	87	88	90	91	92	93	94	95	96	97	98	100	101	102	103	
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38	92	94	95	96	98	99	100	102	103	104	106	107	108	110	111	112	113	115	116	117	118	
39	95	96	97	99	100	102	103	104	106	107	108	110	111	112	114	115	116	118	119	120	122	
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41	99	101	102	104	105	107	108	110	111	113	114	115	117	118	120	121	122	124	125	126	128	
42	102	103	105	106	108	109	111	112	114	115	117	118	120	121	123	124	125	127	128	130	131	
43	104	106	107	109	110	112	114	115	117	118	120	121	123	124	125	127	128	130	131	133	134	
44	107	108	110	111	113	115	116	118	120	121	122	124	125	127	128	130	131	133	134	136	137	
45	109	111	112	114	116	117	119	120	122	124	125	127	128	130	131	133	134	136	137	139	140	
46	112	113	115	117	118	120	121	123	125	126	128	130	131	133	134	136	137	139	140	142	143	
47	114	116	117	119	121	122	124	126	128	129	131	132	134	136	137	139	140	142	143	145	146	
48	116	118	120	122	123	125	127	128	131	132	133	135	137	138	140	142	143	145	146	148	150	
49	119	121	122	124	126	128	129	131	133	135	136	138	140	141	143	145	146	148	149	151	153	
50	121	123	125	127	128	130	132	134	136	137	139	141	142	144	146	148	149	151	152	154	156	
51	124	126	127	129	131	133	135	136	139	140	142	144	145	147	149	150	152	154	156	157	159	
52	126	128	130	132	134	135	137	139	141	143	145	146	148	150	152	153	155	157	159	160	162	
53	128	130	132	134	136	138	140	142	144	146	147	149	151	153	155	156	158	160	162	163	165	
54	131	133	135	137	139	141	143	144	147	148	150	152	154	156	158	159	161	163	165	167	169	
55	133	135	137	139	141	143	145	147	150	151	153	155	157	159	160	162	164	166	168	170	171	
56	136	138	140	142	144	146	148	150	152	154	156	158	160	162	163	165	167	169	171	173	174	
57	138	140	142	144	146	148	151	153	155	157	159	160	162	164	166	168	170	172	174	176	178	
58	141	143	145	147	149	151	153	155	158	159	161	163	165	167	169	171	173	175	177	179	181	
59	143	145	147	150	152	154	156	158	160	162	164	166	168	170	172	174	176	178	180	182	184	
60	145	148	150	152	154	156	158	161	163	165	167	169	171	173	175	177	179	181	183	185	187	

Nat. Versines.

(v.)

	40°	41°	42°	43°	44°	45°	46°	47°	48°	49°
0	0233956	0245290	0256855	0268646	0280660	0292893	0305342	0318002	0330869	0343941
1	0234143	0245481	0257050	0268845	0280862	0293099	0305551	0318214	0331086	0344160
2	34330	45072	57245	69043	81064	93305	05760	18427	31302	44380
3	34517	45863	57439	69242	81267	93511	05970	18640	31518	44600
4	0234704	0246054	0257634	0269440	0281469	0293716	0306179	0318853	0331734	0344820
5	34891	46245	57820	69639	81671	93922	06389	19066	31951	45039
6	35079	46437	58024	69838	81874	94128	06598	19279	32167	45259
7	0235206	0246628	0258219	0270036	0282076	0294334	0306808	0319492	0332384	0345479
8	35441	46819	58414	70235	82279	94541	07017	19705	32601	45699
9	35631	47011	58600	70434	82481	94747	07227	19919	32817	45919
10	0235829	0247302	0258905	0270633	0282684	0294963	0307437	0320132	0333034	0346139
11	36016	47303	59000	70832	82887	95159	07647	20345	33251	46359
12	36204	47515	59195	71031	83089	95366	07857	20559	33467	46579
13	0236392	0247777	0259391	0271230	0283292	0295572	0308067	0320772	0333684	0346800
14	36580	47968	59586	71430	83495	95779	08277	20968	33801	47029
15	36767	48160	59782	71629	83698	95985	08487	21199	34118	47240
16	0236955	0248332	0259977	0271828	0283901	0296192	0308697	0321413	0334335	0347461
17	37144	48544	60173	72028	84104	96399	08907	21627	34552	47681
18	37332	48736	60369	72227	84307	96605	09118	21840	34770	47902
19	0237520	0248928	0260565	0272427	0284510	0296812	0309328	0322054	0334987	0348122
20	37708	49120	60761	72626	84714	97019	09538	22268	35204	48342
21	37896	49312	60956	72826	84917	97226	09749	22482	35421	48563
22	0238085	0249504	0261152	0273026	0285120	0297433	0309959	0322606	0335530	0348784
23	38273	49697	61348	73225	85324	97640	10170	22910	35856	49006
24	38462	49889	61545	73425	85527	97847	10380	23124	36074	49226
25	0238650	0250081	0261741	0273625	0285731	0298054	0310591	0323338	0336291	0349447
26	38838	50274	61937	73825	85731	98261	10802	23552	36509	49668
27	39028	50466	62133	74025	85938	98469	11013	23767	36727	49889
28	0239216	0250650	0262330	0274225	0286342	0298676	0311223	0323981	0336944	0350110
29	39405	50852	62526	74425	86546	98883	11434	24195	37162	50331
30	39594	51044	62723	74626	86750	99091	11645	24410	37380	50552
31	0239783	0251237	0262919	0274826	0286953	0299298	0311856	0324624	0337598	0350773
32	39972	51430	63116	75026	87157	99508	12067	24839	37816	50994
33	40161	51623	63312	75227	87361	99713	12279	25053	38034	51216
34	0240350	0251816	0263509	0275427	0287566	0299921	0312490	0325268	0338252	0351437
35	40539	52009	63706	75628	87770	300129	12701	25483	38470	51659
36	40729	52202	63903	75828	87974	00337	12912	25696	38683	51880
37	0240918	0252395	0264106	0276029	0288178	0300544	0313124	0325912	0338906	0352102
38	41107	52588	64297	76229	88383	00752	13335	26172	39125	52323
39	41297	52782	64494	76430	88587	00960	13547	26342	39343	52545
40	0241486	0252975	0264691	0276631	0288791	0301168	0313758	0326557	0339561	0352767
41	41676	53168	64888	76832	88996	01377	13970	26772	39780	52968
42	41866	53362	65085	77033	89200	01585	14182	26987	39996	53210
43	0242056	0253555	0265283	0277234	0289405	0301793	0314393	0327208	0340217	0353432
44	42245	53749	65480	77435	89610	02001	14605	27418	40435	53654
45	42435	53943	65677	77636	89815	02209	14817	27633	40654	53876
46	0242625	0254136	0265875	0277837	0290019	0302418	0315029	0327848	0340873	0354008
47	42815	54330	66072	78038	90224	02626	15241	28064	41092	54330
48	43005	54524	66270	78240	90429	02835	15453	28279	41310	54542
49	0243195	0254718	0266468	0278441	0290634	0303043	0315665	0328495	0341529	0354764
50	43385	54912	66665	78643	90839	03252	15677	28710	41748	54987
51	43575	55106	66863	78844	91044	03461	16089	28926	41967	55209
52	0243766	0255300	0267061	0279046	0291250	0303669	0316302	0329142	0342185	0355431
53	43956	55494	67259	79247	91455	03878	16514	29358	42406	55654
54	44146	55688	67457	79449	91660	04087	16726	29573	42625	55876
55	0244337	0255883	0267655	0279651	0291865	0304296	0316939	0329789	0342844	0356099
56	44528	56077	67853	79852	92071	04505	17151	30005	43063	56321
57	44718	56271	68051	80054	92276	04714	17364	30221	43283	56544
58	0244909	0256466	0268250	0280256	0292482	0304823	0317576	0330437	0343502	0356767
59	45100	56661	68448	80458	92688	05132	17789	30653	43721	56990
60	45290	56855	68646	80660	92893	05342	18002	30869	43941	57212

Nat. Versines.

(v.)

	50°	51°	52°	53°	54°	55°	56°	57°	58°	59°	
0	0357212	0370880	0384538	0398185	0412215	0426421	0440807	0455361	0470081	0484962	0
1	0357435	0370906	0384568	0398417	0412450	0426682	0441048	0455605	0470327	0485311	1
2	0357658	0371132	0384797	0398650	0412685	0426900	0441289	0455849	0470574	0485481	2
3	0357881	0371358	0385026	0398882	0412921	0427139	0441531	0456093	0470821	0485710	3
4	0358104	0371584	0385256	0399115	0413156	0427377	0441772	0456337	0471068	0485960	4
5	0358327	0371811	0385485	0399347	0413392	0427616	0442013	0456581	0471315	0486209	5
6	0358550	0372037	0385716	0399580	0413628	0427854	0442255	0456826	0471562	0486459	6
7	0358774	0372263	0385944	0399812	0413863	0428093	0442496	0457070	0471809	0486708	7
8	0358997	0372490	0386174	0400045	0414099	0428331	0442738	0457314	0472056	0486958	8
9	0359220	0372716	0386404	0400278	0414335	0428570	0442979	0457558	0472303	0487208	9
10	0359443	0372943	0386633	0400511	0414571	0428800	0443221	0457803	0472550	0487457	10
11	0359667	0373169	0386863	0400743	0414806	0429048	0443463	0458047	0472797	0487707	11
12	0359890	0373396	0387093	0400970	0415042	0429286	0443704	0458292	0473044	0487957	12
13	0360114	0373623	0387323	0401209	0415278	0429525	0443946	0458536	0473291	0488207	13
14	0360337	0373850	0387553	0401442	0415514	0429764	0444188	0458781	0473539	0488457	14
15	0360561	0374076	0387783	0401675	0415750	0430003	0444430	0459025	0473786	0488707	15
16	0360785	0374303	0388013	0401908	0415986	0430242	0444672	0459270	0474033	0488957	16
17	0361008	0374530	0388243	0402142	0416223	0430481	0444914	0459515	0474281	0489207	17
18	0361232	0374757	0388473	0402375	0416459	0430720	0445156	0459760	0474528	0489457	18
19	0361456	0374984	0388703	0402608	0416695	0430960	0445398	0460004	0474776	0489707	19
20	0361680	0375211	0388933	0402841	0416931	0431199	0445640	0460249	0475023	0489957	20
21	0361904	0375439	0389164	0403073	0417168	0431438	0445882	0460494	0475271	0490208	21
22	0362128	0375666	0389394	0403308	0417404	0431677	0446124	0460739	0475519	0490458	22
23	0362352	0375893	0389624	0403542	0417640	0431917	0446366	0460984	0475766	0490708	23
24	0362576	0376120	0389855	0403775	0417877	0432156	0446608	0461229	0476014	0490959	24
25	0362800	0376348	0390085	0404009	0418114	0432396	0446851	0461474	0476262	0491209	25
26	0363024	0376575	0390316	0404242	0418350	0432635	0447093	0461719	0476510	0491459	26
27	0363248	0376803	0390546	0404476	0418587	0432875	0447335	0461965	0476758	0491710	27
28	0363473	0377030	0390777	0404710	0418823	0433114	0447578	0462210	0477006	0491960	28
29	0363697	0377258	0391008	0404943	0419060	0433354	0447820	0462455	0477253	0492211	29
30	0363922	0377486	0391239	0405177	0419297	0433594	0448063	0462700	0477501	0492462	30
31	0364146	0377713	0391469	0405411	0419534	0433833	0448306	0462946	0477749	0492712	31
32	0364371	0377941	0391700	0405645	0419771	0434073	0448548	0463191	0477998	0492963	32
33	0364595	0378169	0391931	0405879	0420008	0434313	0448791	0463437	0478246	0493214	33
34	0364820	0378396	0392162	0406113	0420245	0434553	0449034	0463682	0478494	0493465	34
35	0365045	0378624	0392393	0406347	0420482	0434793	0449276	0463928	0478742	0493715	35
36	0365269	0378852	0392624	0406581	0420719	0435033	0449519	0464173	0478990	0493966	36
37	0365494	0379080	0392855	0406815	0420956	0435273	0449762	0464419	0479238	0494217	37
38	0365719	0379308	0393086	0407049	0421193	0435513	0450005	0464664	0479487	0494468	38
39	0365944	0379536	0393318	0407284	0421430	0435753	0450248	0464910	0479735	0494719	39
40	0366169	0379764	0393549	0407518	0421668	0435993	0450491	0465156	0479984	0494970	40
41	0366394	0379993	0393780	0407752	0421905	0436234	0450734	0465402	0480232	0495221	41
42	0366619	0380221	0394012	0407987	0422142	0436474	0450977	0465648	0480481	0495472	42
43	0366844	0380449	0394243	0408221	0422380	0436714	0451220	0465893	0480729	0495723	43
44	0367069	0380678	0394474	0408456	0422617	0436955	0451463	0466139	0480978	0495975	44
45	0367295	0380906	0394706	0408690	0422855	0437195	0451707	0466385	0481227	0496226	45
46	0367520	0381134	0394938	0408925	0423092	0437436	0451950	0466631	0481475	0496477	46
47	0367745	0381363	0395169	0409160	0423330	0437676	0452193	0466878	0481724	0496729	47
48	0367971	0381592	0395401	0409394	0423568	0437917	0452437	0467124	0481973	0496980	48
49	0368196	0381820	0395633	0409629	0423805	0438157	0452680	0467370	0482222	0497231	49
50	0368422	0382049	0395864	0409864	0424043	0438398	0452924	0467618	0482471	0497483	50
51	0368647	0382278	0396096	0410099	0424281	0438639	0453167	0467862	0482720	0497734	51
52	0368873	0382506	0396328	0410334	0424519	0438879	0453411	0468109	0482969	0497986	52
53	0369098	0382735	0396560	0410569	0424757	0439120	0453654	0468355	0483218	0498238	53
54	0369324	0382964	0396792	0410804	0424995	0439361	0453898	0468600	0483467	0498490	54
55	0369550	0383193	0397024	0411039	0425233	0439602	0454142	0468844	0483716	0498741	55
56	0369776	0383422	0397256	0411274	0425471	0439843	0454385	0469094	0483965	0498993	56
57	0369999	0383651	0397488	0411509	0425709	0440084	0454629	0469341	0484214	0499244	57
58	0370228	0383880	0397720	0411744	0425947	0440325	0454873	0469587	0484463	0499496	58
59	0370454	0384109	0397953	0411979	0426185	0440566	0455117	0469834	0484713	0499748	59
60	0370680	0384338	0398185	0412215	0426424	0440807	0455361	0470081	0484962	0500000	60

Parts for Seconds.

(v.)

	50°	51°	52°	53°	54°	55°	56°	57°	58°	59°	60°	
	0' 30'	0' 30'	0' 30'	0' 30'	0' 30'	0' 30'	0' 30'	0' 30'	0' 30'	0' 30'	0' 30'	0' 30'
1	4	4	4	4	4	4	4	4	4	4	4	1
2	7	7	8	8	8	8	8	8	8	8	8	2
3	11	11	11	11	11	11	11	11	11	11	11	3
4	15	15	15	15	15	15	15	15	15	15	15	4
5	19	19	19	19	19	19	19	19	19	19	19	5
6	22	22	23	23	23	23	23	23	23	23	23	6
7	26	26	26	27	27	27	27	27	27	27	27	7
8	30	30	30	31	31	31	31	31	31	31	31	8
9	33	34	34	34	35	35	35	35	35	35	35	9
10	37	37	38	38	38	39	39	39	39	39	39	10
11	41	41	41	42	42	42	43	43	43	43	43	11
12	45	45	45	46	46	46	47	47	47	47	47	12
13	48	49	49	50	50	50	51	51	51	51	51	13
14	52	52	52	53	53	53	54	54	54	54	54	14
15	56	56	57	57	57	58	58	58	58	58	58	15
16	59	60	60	61	61	61	62	62	62	62	62	16
17	63	64	64	65	65	65	66	66	66	66	66	17
18	67	67	68	68	69	69	70	70	70	70	70	18
19	71	71	72	72	73	73	74	74	74	74	74	19
20	74	75	75	76	76	77	77	78	78	78	78	20
21	78	79	79	80	80	81	81	82	82	82	82	21
22	82	82	83	83	84	84	85	85	85	85	85	22
23	85	86	87	87	88	88	89	89	89	89	89	23
24	89	90	90	91	91	92	92	92	92	92	92	24
25	93	94	94	95	95	96	96	96	96	96	96	25
26	97	97	98	98	99	99	100	100	100	100	100	26
27	100	101	101	102	102	102	103	103	103	103	103	27
28	104	105	105	106	106	106	107	107	107	107	107	28
29	108	108	109	109	110	110	111	111	111	111	111	29
30	111	112	113	113	114	114	115	115	115	115	115	30
31	115	116	117	117	118	118	119	119	119	119	119	31
32	119	120	120	121	121	122	122	122	122	122	122	32
33	123	123	124	124	125	125	126	126	126	126	126	33
34	126	127	127	128	128	129	129	129	129	129	129	34
35	130	131	131	132	132	133	133	133	133	133	133	35
36	134	134	135	135	136	136	137	137	137	137	137	36
37	137	138	138	139	139	140	140	140	140	140	140	37
38	141	142	142	143	143	144	144	144	144	144	144	38
39	145	146	146	147	147	148	148	148	148	148	148	39
40	149	150	150	151	151	152	152	152	152	152	152	40
41	152	153	153	154	154	155	155	155	155	155	155	41
42	156	157	157	158	158	159	159	159	159	159	159	42
43	160	161	161	162	162	163	163	163	163	163	163	43
44	163	164	164	165	165	166	166	166	166	166	166	44
45	167	168	168	169	169	170	170	170	170	170	170	45
46	171	172	172	173	173	174	174	174	174	174	174	46
47	175	176	176	177	177	178	178	178	178	178	178	47
48	178	179	179	180	180	181	181	181	181	181	181	48
49	182	183	183	184	184	185	185	185	185	185	185	49
50	186	187	187	188	188	189	189	189	189	189	189	50
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52	193	194	194	195	195	196	196	196	196	196	196	52
53	197	198	198	199	199	200	200	200	200	200	200	53
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55	204	205	205	206	206	207	207	207	207	207	207	55
56	208	209	209	210	210	211	211	211	211	211	211	56
57	212	213	213	214	214	215	215	215	215	215	215	57
58	215	216	216	217	217	218	218	218	218	218	218	58
59	219	220	220	221	221	222	222	222	222	222	222	59
60	223	224	224	225	225	226	226	226	226	226	226	60

(v.)

Nat. Versines

	60°	61°	62°	63°	64°	65°	66°	67°	68°	69°	
0	0500000	0515190	0530528	0546009	0561829	0577382	0593263	0609529	0625393	0641633	
1	0500252	0515445	0530785	0546269	0561890	0577645	0593529	0609537	0625663	0641904	1
2	00504	15699	31042	46328	62152	77909	93795	09804	25033	42175	2
3	00736	15954	31299	46787	62413	78173	94001	10072	25203	42447	3
4	0501008	0516208	0531556	0547046	0562675	0578437	0594327	0610340	0626473	0642719	4
5	01260	16403	31813	47306	62937	78700	94592	10608	26742	42990	5
6	01512	16718	32070	47565	63198	78964	94858	10876	27012	43262	6
7	0501764	0516972	0532327	0547825	0563460	0579228	0595124	0611144	0627282	0643534	7
8	02017	17227	32584	48084	63722	79402	95300	11412	27552	43806	8
9	02269	17482	32842	48344	64083	79756	95556	11680	27822	44077	9
10	0502521	0517737	0533099	0548603	0564245	0580020	0595922	0611948	0628092	0644349	10
11	02774	17991	33356	48863	64507	80284	96189	12216	28362	44621	11
12	03026	18240	33613	49122	64769	80548	96455	12484	28632	44893	12
13	0503278	0518501	0533871	0549382	0565031	0580812	0596721	0612753	0628902	0645165	13
14	03531	18756	34128	49642	65293	81076	96987	13021	29172	45437	14
15	03783	19011	34386	49902	65555	81340	97253	13289	29443	45709	15
16	0504038	0519266	0534643	0550161	0565817	0581604	0597520	0613557	0629713	0645981	16
17	04289	19521	34900	50421	66079	81869	97786	13826	29983	46253	17
18	04541	19776	35158	50681	66341	82133	98052	14094	30253	46525	18
19	0504794	0520032	0535415	0550941	0566603	0582307	0598319	0614362	0630523	0646797	19
20	05047	20287	35673	50941	66865	82661	98585	14631	30794	47069	20
21	05299	20541	35931	51461	67127	82926	98851	14899	31064	47342	21
22	0505562	0520797	0536188	0551721	0567390	0583190	0599118	0615168	0631335	0647614	22
23	05805	21063	36446	51981	67652	83455	99384	15436	31806	47886	23
24	06068	21308	36704	52241	67914	83719	99651	15705	31876	48158	24
25	0506311	0521564	0536902	0552501	0568177	0583984	0599917	0615973	0632146	0648431	25
26	06564	21819	37220	52761	68439	84248	600184	16242	32416	48703	26
27	06817	22074	37477	53021	68701	84513	60451	16510	32687	48975	27
28	0507070	0522330	0537735	0553282	0568964	0584777	0600717	0616779	0632957	0649248	28
29	07323	22586	37993	53542	69226	85042	60984	17048	33228	49620	29
30	07576	22841	38251	53802	69489	85307	61261	17317	33499	49793	30
31	0507830	0523097	0538509	0554082	0569751	0585571	0601518	0617585	0633769	0650065	31
32	08063	23363	38767	54323	70014	85836	61784	17854	34040	50338	32
33	08336	23608	39026	54583	70277	86101	62051	18123	34311	50610	33
34	0508589	0523864	0539284	0554844	0570539	0586360	0602318	0618392	0634582	0650883	34
35	08843	24120	39542	55104	70802	86631	62585	18601	34852	51155	35
36	09098	24376	39800	55365	71065	86896	62852	18930	35123	51428	36
37	0509360	0524632	0540058	0555626	0571328	0587160	0603119	0619191	0635394	0651701	37
38	09003	24888	40317	55886	71590	87425	63386	19468	35665	51973	38
39	09857	25144	40575	56147	71853	87690	63653	19737	35936	52246	39
40	0510110	0525400	0540833	0556407	0572116	0587955	0603920	0620006	0636207	0652519	40
41	10364	25056	41092	56668	72379	88220	64187	20275	36478	52791	41
42	10617	25312	41350	56929	72642	88486	64454	20544	36749	53064	42
43	0510871	0526168	0541609	0557190	0572905	0588751	0604722	0620813	0637020	0653337	43
44	11125	26424	41867	57450	73168	89016	64989	21082	37291	53610	44
45	11379	26690	42126	57711	73431	89281	65256	21351	37562	53883	45
46	0511633	0526937	0542385	0557972	0573694	0589546	0605523	0621621	0637833	0654156	46
47	11886	27193	42643	58233	73957	89812	65791	21890	38104	54429	47
48	12140	27449	42902	58494	74221	90077	66058	22159	38376	54702	48
49	0512394	0527706	0543161	0558755	0574484	0590342	0606326	0622429	0638647	0654975	49
50	12648	27902	43420	59016	74747	90608	66593	22698	38918	55248	50
51	12902	28218	43678	59277	75010	90873	66859	22967	39189	55521	51
52	0513166	0528475	0543937	0559538	0575274	0591138	0607128	0623237	0639460	0655794	52
53	13410	28731	44196	59800	75537	91404	67395	23506	39732	56067	53
54	13665	28988	44455	60061	75801	91669	67663	23776	40003	56340	54
55	0513919	0529346	0544714	0560322	0576064	0591935	0607930	0624045	0640275	0656613	55
56	14173	29501	44973	60583	76327	92201	68198	24315	40546	56887	56
57	14427	29758	45232	60845	76591	92466	68466	24584	40817	57160	57
58	0514682	0530015	0545491	0561106	0576854	0592732	0608733	0624854	0641089	0657433	58
59	14930	30272	45750	61307	77118	92998	69001	25124	41360	57706	59
60	15190	30528	46009	61629	77382	93263	69269	25393	41632	57980	60

Parts for Seconds

(v.)

	60°		61°		62°		63°		64°		65°		66°		67°		68°		69°		70°	
	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'
1	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	5	5	5	5	5	5	1
2	8	8	8	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	2
3	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	14	14	14	14	14	3
4	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	18	18	18	18	18	4
5	21	21	21	21	21	21	22	22	22	22	22	22	22	22	22	22	22	23	23	23	23	5
6	25	25	25	26	26	26	26	26	26	26	26	26	27	27	27	27	27	27	27	27	27	6
7	29	30	30	30	30	30	30	30	31	31	31	31	31	31	31	31	31	32	32	32	32	7
8	34	34	34	34	34	34	35	35	35	35	35	35	36	36	36	36	36	36	36	36	36	8
9	38	38	38	38	39	39	39	39	39	39	40	40	40	40	40	40	40	41	41	41	41	9
10	42	42	42	43	43	43	43	43	44	44	44	44	44	44	45	45	45	45	45	45	46	10
11	46	46	47	47	47	47	48	48	48	48	48	49	49	49	49	49	49	50	50	50	50	11
12	50	50	51	51	51	52	52	52	52	53	53	53	53	53	53	54	54	54	54	54	55	12
13	55	55	55	55	56	56	56	56	57	57	57	57	58	58	58	58	58	59	59	59	59	13
14	59	59	59	60	60	60	60	61	61	61	62	62	62	62	62	63	63	63	63	64	64	14
15	63	63	64	64	64	64	65	65	65	65	66	66	66	67	67	67	67	68	68	68	68	15
16	67	67	68	68	68	69	69	69	70	70	70	71	71	71	71	72	72	72	72	73	73	16
17	71	72	72	72	73	73	73	74	74	74	75	75	75	76	76	76	76	77	77	77	77	17
18	76	76	76	77	77	77	78	78	78	79	79	79	80	80	80	81	81	81	81	82	82	18
19	80	80	81	81	81	82	82	82	83	83	83	84	84	84	85	85	85	86	86	86	87	19
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23	97	97	98	98	98	99	99	100	100	101	101	101	102	102	103	103	103	104	104	104	105	23
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32	134	135	136	136	137	138	138	139	139	140	141	141	142	142	143	143	144	144	145	145	146	32
33	139	139	140	141	141	142	143	143	144	144	145	146	146	147	147	148	148	149	149	150	150	33
34	143	143	144	145	146	146	147	148	148	149	149	150	151	151	152	152	153	153	154	154	155	34
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36	151	152	153	153	154	155	156	156	157	158	159	159	160	161	161	162	162	163	163	164	164	36
37	155	156	157	158	158	159	160	161	161	162	163	163	164	164	165	166	166	167	167	168	169	37
38	160	160	161	162	163	163	164	165	166	166	167	168	168	169	170	170	171	171	172	173	173	38
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41	172	173	174	175	176	176	177	178	179	179	180	181	182	182	183	184	184	185	185	186	187	41
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46	193	194	195	196	197	198	199	200	200	201	202	203	204	205	205	206	207	207	208	209	210	46
47	197	198	199	200	201	202	203	204	205	206	207	207	208	209	210	211	211	212	213	213	214	47
48	202	203	204	205	205	206	207	208	209	210	211	212	213	213	214	215	216	217	217	218	219	48
49	206	207	208	209	210	211	212	213	214	214	215	216	217	218	219	220	220	221	222	222	223	49
50	210	211	212	213	214	215	216	217	218	219	220	221	221	222	223	224	225	226	226	227	228	50
51	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	228	229	230	231	232	232	51
52	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	235	236	237	52
53	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	237	238	239	240	241	241	53
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55	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	55
56	235	236	237	238	240	241	242	243	244	245	246	247	248	249	250	251	252	253	253	254	255	56
57	239	240	242	243	244	245	246	247	249	249	250	251	252	253	254	255	256	257	258	259	260	57
58	244	246	246	247	248	249	251	252	253	254	255	256	257	258	259	260	261	262	262	263	264	58
59	248	249	250	251	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	59
60	252	253	254	256	257	258	259	260	261	263	264	265	266	267	268	269	270	271	272	273	273	60

(v.)

Nat. Versines.

	70°	71°	72°	73°	74°	75°	76°	77°	78°	79°	
0	0657980	0674433	0690983	0707628	0724363	0741181	0758078	0775049	0792088	0809191	0
1	0658253	0674707	0691260	0707906	0724642	0741462	0758360	0775332	0792373	0809477	1
2	58527	74882	91536	08185	24922	41743	58643	75616	92657	09762	2
3	58800	75267	91813	08463	25202	42024	58925	75890	92942	10048	3
4	0659073	0675632	0692090	0708741	0725481	0742305	0759207	0776183	0793227	0810333	4
5	59347	75807	92367	09019	25761	42536	59490	76466	93511	10619	5
6	59620	76083	92643	09298	26041	42867	59772	76780	93796	10905	6
7	0659894	0676358	0692920	0709576	0726321	0743148	0760054	0777033	0794060	0811190	7
8	60167	76633	93197	09854	26600	43429	60337	77317	94365	11476	8
9	60441	76908	93474	10133	26880	43711	60619	77601	94650	11761	9
10	0660715	0677184	0693751	0710411	0727160	0743992	0760902	0777884	0794934	0812047	10
11	60088	77459	94028	10690	27440	44273	61184	78168	95219	12333	11
12	61202	77734	94305	10968	27720	44554	61468	78451	95504	12619	12
13	0661536	0678010	0694582	0711247	0728000	0744835	0761749	0778735	0795789	0812904	13
14	60199	78285	94859	11525	28280	45117	62032	79019	96073	13190	14
15	62083	78560	95136	11804	28560	45398	62314	79303	96358	13476	15
16	0662357	0678636	0695413	0712082	0728839	0745679	0762597	0779586	0796643	0813762	16
17	62631	79111	95690	12361	29119	45901	62879	79870	96928	14048	17
18	62905	79387	95967	12639	29400	46242	63162	80154	97213	14333	18
19	0663179	0679663	0696244	0712918	0729680	0746523	0763444	0780430	0797498	0814619	19
20	63452	79938	96521	13187	29960	46805	63727	80721	97782	14605	20
21	63726	80214	96798	13475	30240	47086	64010	81005	98067	14891	21
22	0664000	0680489	0697076	0713754	0730520	0747368	0764292	0781289	0798352	0815477	22
23	64274	80765	97353	14033	30800	47649	64576	81573	98637	15763	23
24	64548	81041	97630	14312	31080	47931	64858	81857	98922	16049	24
25	0664822	0681316	0697907	0714590	0731360	0748212	0765141	0782141	0799207	0816335	25
26	65007	81592	98185	14869	31641	48494	65423	82425	99492	16620	26
27	65371	81868	98462	15148	31921	48775	65706	82708	99777	16906	27
28	0665645	0682144	0698739	0715427	0732201	0749057	0765989	0782992	0800062	0817192	28
29	65919	82419	99017	15706	32481	49338	66272	83276	100347	17478	29
30	66193	82695	99294	15985	32762	49620	66555	83560	100632	17764	30
31	0666467	0682971	0699573	0716264	0733042	0749902	0766837	0783844	0800917	0818050	31
32	66742	83247	99849	16542	33322	50183	67120	84128	101202	18336	32
33	67016	83523	100127	16821	33603	50465	67403	84412	101487	18623	33
34	0667290	0683790	0700404	0717100	0733883	0750747	0767686	0784606	0801772	0818909	34
35	67564	84075	100692	17370	34163	51028	67959	84981	102057	19196	35
36	67839	84351	100959	17658	34444	51310	68252	85265	102343	19481	36
37	0668113	0684627	0701237	0717938	0734724	0751592	0768535	0785549	0802628	0819767	37
38	68388	84903	101514	18217	35065	51874	68818	85833	102913	20053	38
39	68662	85179	101792	18496	35285	52155	69101	86117	103198	20339	39
40	0668937	0685455	0702070	0718775	0735566	0752437	0769384	0786401	0803483	0820625	40
41	69211	85731	102347	19054	35846	52719	69667	86685	103769	20912	41
42	69486	86007	102625	19333	36127	53001	69950	86970	104054	21198	42
43	0669700	0686284	0702903	0719612	0736407	0753283	0770233	0787254	0804339	0821484	43
44	70035	86560	103161	19892	36688	53505	70516	87538	104624	21770	44
45	70309	86836	103458	20171	36969	53847	70800	87822	104910	22056	45
46	0670584	0687112	0703736	0720450	0737249	0754129	0771083	0788107	0805195	0822343	46
47	70859	87389	104014	20730	37530	54411	71366	88391	105480	22629	47
48	71133	87665	104292	21009	37811	54693	71649	88675	105766	22915	48
49	0671408	0687941	0704570	0721288	0738091	0754975	0771932	0788959	0806051	0823202	49
50	71683	88218	104848	21568	38372	55257	72216	89244	106336	23488	50
51	71958	88494	105126	21847	38653	55530	72499	89528	106622	23774	51
52	0672232	0688771	0705404	0722126	0738934	0755821	0772782	0789813	0806907	0824060	52
53	72507	89047	105682	22406	39215	56103	73065	90097	107193	24347	53
54	72782	89324	105960	22685	39496	56385	73349	90381	107478	24633	54
55	0673057	0689600	0706238	0722965	0739776	0756667	0773632	0790666	0807763	0824920	55
56	73332	89877	106516	23244	40057	56949	73915	90950	108049	25206	56
57	73607	90153	106794	23524	40338	57231	74199	91235	108334	25493	57
58	0673882	0690430	0707072	0723903	0740610	0757514	0774482	0791519	0808620	0825779	58
59	74157	90706	107350	24083	40908	57796	74765	91804	108905	25665	59
60	74432	90983	107628	24363	41181	58078	75049	92088	109191	25952	60

Parts for Seconds.

(v.)

	70°		71°		72°		73°		74°		75°		76°		77°		78°		79°		80°	
"	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'
1	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	4
2	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	10	10	10	10	2
3	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	■
4	18	18	18	18	18	18	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	4
5	23	23	23	23	23	23	23	23	23	23	23	24	24	24	24	24	24	24	24	24	24	5
6	27	27	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	29	29	29	29	6
7	32	32	32	32	32	32	32	33	33	33	33	33	33	33	33	33	33	33	33	33	33	7
8	36	37	37	37	37	37	37	37	37	37	37	38	38	38	38	38	38	38	38	38	38	8
9	41	41	41	41	41	42	42	42	42	42	42	42	42	42	43	43	43	43	43	43	43	9
10	46	46	46	46	46	46	46	46	47	47	47	47	47	47	47	47	47	48	■	48	48	10
11	50	■	50	51	51	51	51	51	51	51	52	52	52	52	52	52	52	52	52	52	53	11
12	55	55	55	55	55	55	56	56	56	56	56	56	56	56	57	57	57	57	57	57	57	12
13	59	59	60	60	60	60	60	60	61	61	61	61	61	61	61	62	62	62	62	62	62	13
14	64	64	64	64	65	65	65	65	65	65	66	66	66	66	66	66	66	67	67	67	67	14
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16	73	73	73	74	74	74	74	74	75	75	75	75	75	75	76	76	76	76	76	76	76	16
17	77	78	78	78	78	79	79	79	79	80	80	80	80	80	80	80	81	81	81	81	81	17
18	82	82	83	83	83	83	84	84	84	84	84	85	85	85	85	85	85	86	86	86	86	18
19	87	87	87	88	88	88	88	88	89	89	89	89	89	90	90	90	90	90	90	91	91	19
20	91	91	92	92	92	92	93	93	93	94	94	94	94	94	94	95	95	95	95	95	95	20
21	96	96	96	97	97	97	97	98	98	98	98	99	99	99	99	99	100	100	100	100	100	21
22	100	101	101	101	101	102	102	102	103	103	103	103	104	104	104	104	104	105	105	105	105	22
23	105	105	105	106	106	106	107	107	107	107	108	108	108	108	109	109	109	109	109	110	110	23
24	109	110	110	110	111	111	111	112	112	112	112	113	113	113	113	114	114	114	114	114	115	24
25	114	114	115	115	115	116	116	117	117	117	117	118	118	118	118	118	119	119	119	119	119	25
26	118	119	119	120	120	120	121	121	121	121	122	122	122	123	123	123	123	124	124	124	124	26
27	123	123	124	124	124	125	125	126	126	126	126	127	127	127	128	128	128	128	128	129	129	27
28	128	128	128	129	129	129	130	130	131	131	131	131	132	132	132	133	133	133	133	133	134	28
29	132	133	133	133	134	134	134	135	135	136	136	136	136	137	137	137	138	138	138	138	138	29
30	137	137	138	138	138	139	139	139	140	140	140	141	141	141	142	142	142	143	143	143	143	30
31	141	142	142	143	143	143	144	144	144	145	145	145	146	146	146	147	147	147	148	148	148	31
32	146	146	147	147	148	148	148	149	149	149	150	150	151	151	151	152	152	152	152	152	153	32
33	150	151	151	152	152	153	153	153	154	154	154	155	155	156	156	156	156	157	157	157	158	33
34	155	155	156	156	157	157	158	158	158	159	159	160	160	160	161	161	161	162	162	162	162	34
35	159	160	160	161	161	162	162	163	163	164	164	164	165	165	165	166	166	166	167	167	167	35
36	164	165	165	166	166	166	167	168	168	169	169	169	170	170	170	170	171	171	171	172	172	36
37	169	169	170	170	171	171	172	172	173	173	173	174	174	175	175	175	176	176	176	176	177	37
38	173	174	174	175	175	176	176	177	177	178	178	178	179	179	180	180	181	181	181	181	181	38
■	178	178	179	179	180	180	181	181	182	182	183	183	183	184	184	185	185	185	186	186	186	39
40	182	183	■	184	184	185	185	186	186	187	187	188	188	189	189	189	190	190	190	191	191	40
41	187	187	188	188	189	190	190	191	191	192	192	193	193	193	194	194	194	195	195	196	196	41
42	191	192	193	193	194	194	195	195	196	196	197	197	198	198	198	199	199	200	200	200	201	42
43	196	197	197	198	198	199	199	200	200	201	201	202	202	203	203	204	204	204	205	205	205	43
44	200	201	202	202	203	203	204	205	205	206	206	207	207	208	208	208	209	209	209	210	210	44
45	205	206	206	207	207	208	209	209	210	210	211	211	212	212	213	213	213	214	214	214	215	45
46	210	210	211	211	212	213	213	214	214	215	215	216	216	217	217	218	218	219	■	220	220	46
47	214	215	215	216	217	217	218	218	219	220	220	221	221	222	222	222	223	223	224	224	224	47
48	219	219	220	221	221	222	223	223	224	224	225	225	226	226	227	227	228	228	228	229	229	48
49	223	224	225	225	226	227	228	228	229	229	230	231	231	231	232	232	233	233	234	234	234	49
50	228	229	229	230	231	231	232	232	233	234	234	235	235	236	236	237	237	238	238	238	239	50
51	232	233	234	234	235	236	236	237	238	238	239	240	240	240	241	241	242	242	243	243	243	51
52	237	238	238	239	240	240	241	242	242	243	243	244	245	245	246	246	247	247	247	248	248	52
53	241	242	243	244	244	245	246	246	247	248	248	249	249	250	250	251	251	252	252	253	253	53
54	246	247	248	248	249	250	250	251	252	252	253	253	254	255	255	256	256	257	257	257	258	54
55	251	251	252	253	254	254	255	256	256	257	258	258	259	259	260	260	261	261	262	262	263	55
56	255	256	257	257	258	259	260	260	261	262	262	263	263	264	265	265	266	266	267	267	267	56
57	260	261	261	262	263	264	264	265	266	266	267	268	268	269	270	270	270	271	271	272	272	57
58	264	265	266	267	267	268	269	270	270	271	272	272	273	273	274	275	275	276	276	276	277	58
59	269	270	270	271	272	273	274	274	275	276	276	277	277	278	279	279	280	■	281	281	282	59
60	273	274	275	276	277	277	278	279	280	280	281	282	282	283	283	284	284	285	286	286	286	60

(v.) Nat. Versines.										
	80°	81°	82°	83°	84°	85°	86°	87°	88°	89°
0	0820332	0843505	0860827	0878131	0895471	0912844	0930243	0947661	0965100	0982548
1	0830638	0843853	0861115	0878419	0895761	0913134	0930534	0947954	0965391	0982838
2	26925	44140	61403	78708	96050	13421	30824	48245	65692	83120
3	27211	44427	61691	78997	96339	13714	31114	48535	65973	83420
4	0827498	0844715	0861979	0879286	0896629	0914003	0931404	0948826	0966263	0983711
5	27784	45092	62267	79574	96918	14293	31694	49110	66554	84002
6	28071	45290	62555	79863	97207	14583	31985	49407	66845	84293
7	0828357	0845577	0862844	0880152	0897497	0914873	0932275	0949698	0967130	0984583
8	28044	45864	63132	80441	97786	15163	32565	49988	67426	84874
9	28931	46152	63420	80730	98075	15453	32855	50279	67717	85165
10	0829217	0846439	0863700	0881018	0898365	0915742	0933146	0950569	0968008	0985456
11	29504	46727	63996	81307	98654	16032	33436	50860	68298	85747
12	29790	47014	64284	81596	98944	16322	33726	51150	68589	86038
13	0830077	0847302	0864573	0881895	0899233	0916612	0934016	0951441	0968880	0986329
14	30304	47589	64861	82174	99522	16902	34307	51731	69171	86619
15	30650	47877	65149	82463	99812	17192	34597	52022	69461	86910
16	0830937	0848164	0865437	0882761	0900101	0917482	0934867	0952312	0969752	0987201
17	31224	48452	65726	83040	00391	17772	35177	52693	70043	87492
18	31511	48739	66014	83329	00680	18061	35468	52983	70334	87783
19	0831707	0849027	0866302	0883618	0900970	0918351	0935758	0953184	0970634	0988074
20	32084	49314	66590	83907	01259	18641	36048	53475	70915	88365
21	32371	49602	66879	84196	01549	18931	36339	53765	71206	88656
22	0832658	0849889	0867167	0884485	0901838	0919221	0936629	0954056	0971497	0988946
23	32944	50177	67455	84774	02128	19511	36919	54346	71788	89237
24	33231	50465	67744	85063	02417	19801	37209	54637	72078	89528
25	0833518	0850752	0868032	0885352	0902707	0920091	0937500	0954928	0972369	0989819
26	33906	51040	68320	85641	02986	20381	37790	55218	72660	90110
27	34092	51328	68609	85930	03286	20671	38080	55509	72951	90401
28	0834379	0851615	0868897	0886219	0903575	0920961	0938371	0955799	0973241	0990692
29	34665	51903	69185	86308	03865	21251	38661	56090	73632	90983
30	34952	52191	69474	86707	04154	21541	38951	56381	73923	91273
31	0835239	0852478	0869762	0887086	0904444	0921831	0939242	0956671	0974114	0991564
32	35526	52766	70051	87376	04733	22121	39532	56902	74405	91555
33	35813	53054	70340	87664	05023	22411	39822	57252	74695	91846
34	0836100	0853341	0870627	0887963	0905312	0922701	0940113	0957543	0974986	0992437
35	36387	53629	70916	88242	05602	22991	40403	57834	75277	92728
36	36674	53917	71204	88531	05892	23281	40694	58124	75568	93019
37	0836961	0854205	0871493	0888820	0906181	0923571	0940984	0958416	0975859	0993310
38	37248	54402	71781	89109	06471	23861	41274	58706	76149	93600
39	37535	54780	72070	89398	06760	24151	41565	59096	76440	93891
40	0837822	0855068	0872358	0889687	0907050	0924441	0941855	0959287	0976731	0994182
41	38109	55356	72647	89977	07340	24731	42146	59578	77022	94473
42	38396	55644	72935	90266	07629	25021	42436	59868	77313	94764
43	0838683	0855932	0873224	0890555	0907919	0925311	0942726	0960159	0977603	0995055
44	38970	56219	73512	90844	08209	25601	43017	60449	77894	95346
45	39257	56507	73801	91133	08498	25891	43307	60740	78185	95637
46	0839544	0856795	0874090	0891422	0908788	0926182	0943598	0961031	0978476	0995928
47	39832	57083	74378	91711	09078	26472	43888	61321	78767	96218
48	40119	57371	74667	92001	09367	26762	44178	61612	79058	96509
49	0840406	0857659	0874955	0892290	0909657	0927062	0944469	0961903	0979348	0996790
50	40693	57947	75244	92579	09947	27342	44759	62193	79639	97091
51	40980	58235	75533	92868	10236	27632	45050	62484	79930	97382
52	0841267	0858523	0875821	0893157	0910526	0927922	0945340	0962775	0980221	0997673
53	41555	58811	76116	93447	10816	28212	45631	63066	80512	97964
54	41842	59099	76398	93730	11106	28503	45921	63356	80803	98255
55	0842129	0859387	0876687	0894025	0911395	0928793	0946212	0963647	0981093	0998546
56	42410	59675	76976	94314	11685	29083	46502	63938	81384	98736
57	42704	59963	77264	94604	11975	29373	46793	64228	81675	99027
58	0842991	0860251	0877553	0894893	0912265	0929663	0947083	0964519	0981966	0999418
59	43278	60539	77842	95182	12554	29953	47374	64810	82257	99709
60	43565	60827	78131	95471	12844	30243	47664	65100	82548	100000

Nat. Versines.

(v.)

	90°	91°	92°	93°	94°	95°	96°	97°	98°	99°	
0	1000000	1017452	1034900	1052336	1069757	1087156	1104529	1121869	1139173	1156435	0
1	1000291	1017743	1035190	1052620	1070047	1087446	1104818	1122158	1139461	1156722	1
2	00682	18034	35481	52917	70337	87735	05107	22447	39749	57009	2
3	00673	18325	35772	53207	70627	88025	05396	22736	40037	57296	3
4	1001164	1018616	1036062	1053498	1070917	1088315	1105686	1123024	1140325	1157584	4
5	01454	18907	36353	53788	71207	88605	05975	23313	40613	57871	5
6	01745	19197	36644	54079	71497	88894	06264	23602	40901	58159	6
7	1002036	1019488	1036934	1054369	1071788	1089184	1106553	1123890	1141189	1158445	7
8	02327	19779	37225	54600	72078	89474	06843	24179	41477	58733	8
9	02618	20070	37516	54950	72368	89764	07132	24467	41765	59020	9
10	1002909	1020361	1037807	1055241	1072658	1090053	1107421	1124756	1142053	1159307	10
11	03200	20652	38097	55531	72948	90343	07710	25045	42341	59694	11
12	03491	20942	38388	55822	73238	90633	07999	25333	42629	59981	12
13	1003781	1021233	1038679	1056112	1073528	1090922	1108289	1125622	1142917	1160168	13
14	04072	21524	38969	56403	73818	91212	08578	25810	43205	60456	14
15	04363	21815	39260	56693	74109	91502	08867	26199	43493	60743	15
16	1004654	1022106	1039551	1056983	1074399	1091791	1109156	1126488	1143781	1161030	16
17	04945	22397	39841	57274	74689	92081	09445	26776	44068	61317	17
18	05236	22687	40132	57564	74979	92371	09734	27065	44356	61604	18
19	1005527	1022978	1040422	1057854	1075269	1092660	1110023	1127353	1144644	1161891	19
20	05818	23209	40713	58145	75559	92950	10313	27642	44932	62178	20
21	06109	23500	41004	58435	75849	93240	10602	27930	45220	62465	21
22	1006400	1023851	1041294	1058726	1076139	1093529	1110891	1128219	1145508	1162752	22
23	06690	24141	41585	59016	76429	93819	11180	28507	45795	63039	23
24	06981	24432	41876	59306	76719	94108	11469	28796	46083	63326	24
25	1007272	1024723	1042166	1059597	1077009	1094398	1111758	1129084	1146371	1163613	25
26	07503	25014	42457	59807	77209	94688	12047	29373	46559	63900	26
27	07854	25305	42748	60178	77589	94977	12336	29661	46940	64187	27
28	1008145	1025595	1043038	1060468	1077879	1095267	1112625	1129949	1147234	1164474	28
29	08436	25886	43329	60758	78169	95556	12914	30238	47522	64761	29
30	08727	26177	43619	61049	78459	95846	13203	30526	47809	65048	30
31	1009017	1026468	1043910	1061339	1078749	1096135	1113492	1130815	1148097	1165335	31
32	09308	26759	44201	61829	79030	96425	13781	31103	48385	65621	32
33	09599	27049	44491	61920	79329	96714	14070	31391	48672	65908	33
34	1009890	1027340	1044782	1062210	1079619	1097004	1114359	1131680	1148960	1166195	34
35	10181	27631	45072	62500	79909	97293	14648	31968	49248	66482	35
36	10472	27922	45363	62791	80199	97583	14937	32256	49535	66769	36
37	1010763	1028212	1045654	1063081	1080489	1097872	1115226	1132545	1149823	1167056	37
38	11054	28503	45944	63371	80779	98162	15515	32833	50111	67342	38
39	11344	28794	46235	63661	81069	98451	15804	33121	50398	67629	39
40	1011635	1029005	1046525	1063952	1081359	1098741	1116093	1133410	1150686	1167916	40
41	11926	29376	46816	64242	81649	99030	16382	33698	50973	68203	41
42	12217	29666	47107	64532	81939	99320	16671	33986	51261	68489	42
43	1012508	1029957	1047307	1064823	1082228	1099609	1116960	1134274	1151548	1168776	43
44	12799	30248	47688	65113	82518	99899	17249	34563	51838	68963	44
45	13090	30539	47978	65403	82808	100188	17537	34851	52123	69250	45
46	1013381	1030829	1048269	1065693	1083098	1100478	1117826	1135139	1152411	1169636	46
47	13671	31120	48559	65984	83388	100767	18115	35427	52698	69923	47
48	13962	31411	48850	66274	83678	101056	18404	35716	52986	70210	48
49	1014253	1031702	1049140	1066564	1083968	1101346	1118693	1136004	1153273	1170496	49
50	14544	31992	49431	66854	84258	101636	18982	36292	53561	70753	50
51	14835	32283	49721	67145	84547	101925	19270	36580	53848	71043	51
52	1015126	1032574	1050012	1067435	1084837	1102214	1119559	1136868	1154136	1171356	52
53	15417	32964	50302	67725	85127	102503	19848	37156	54423	71643	53
54	15707	33155	50593	68015	85417	102793	20137	37445	54710	71929	54
55	1015990	1033446	1050884	1068306	1085707	1103082	1120426	1137733	1154998	1172216	55
56	16289	33737	51174	68596	85997	103371	20714	38021	55285	72502	56
57	16580	34027	51465	68886	86288	103661	21003	38309	55573	72789	57
58	1016871	1034318	1051755	1069176	1086578	1103999	1121292	1138597	1155860	1173075	58
59	17162	34609	52046	69466	86866	104239	21581	38885	56147	73362	59
60	17452	34900	52336	69757	87156	104529	21869	39173	56434	73648	60

Parts for Seconds.

(v.)

	90°		91°		92°		93°		94°		95°		96°		97°		98°		99°		100°	
	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'
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7	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	7
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55	267	267	267	267	266	266	266	266	266	266	265	265	265	265	264	264	264	263	263	263	263	55
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59	286	286	286	286	286	286	286	286	285	285	285	285	284	284	284	284	283	283	283	282	282	59
60	291	291	291	291	291	290	290	290	290	290	290	290	289	289	289	288	288	288	287	287	286	60

(r.)

Nat. Versines.

	100°	101°	102°	103°	104°	105°	106°	107°	108°	109°	
0	1173640	1190609	1207912	1224051	1241922	1258819	1276637	1292372	1309017	1325568	0
1	1173935	1191095	1208196	1225235	1242204	1259100	1275917	1292650	1309294	1325843	1
2	74221	91360	08481	25518	42486	59381	76197	92928	06570	26118	2
3	74508	91666	08765	25801	42769	59662	76476	93206	06847	26503	3
4	1174794	1191951	1209050	1226065	1243051	1259943	1276756	1293484	1310123	1326668	4
5	76080	92237	09334	26368	43333	60224	77035	93762	10400	26943	5
6	75367	92523	09619	26651	43615	60505	77315	94040	10676	27218	6
7	1176653	1192807	1209903	1226935	1243807	1260785	1277584	1294318	1310953	1327493	7
8	75940	93093	10187	27218	44179	61066	77874	94596	11229	27768	8
9	76220	93378	10472	27501	44461	61347	78153	94874	11506	28042	9
10	1176512	1193664	1210750	1227784	1244743	1261628	1278432	1295152	1311782	1328317	10
11	76798	93949	11041	28060	45025	61909	78712	95436	12059	28592	11
12	77085	94234	11326	28351	45307	62180	78991	95708	12335	28867	12
13	1177371	1194520	1211609	1228634	1245589	1262470	1279270	1295986	1312611	1329141	13
14	77657	94805	11893	28917	45871	62751	79550	96204	12886	29416	14
15	77944	95090	12178	29200	46153	63031	79829	96542	13164	29691	15
16	1178230	1195376	1212462	1229484	1246435	1263312	1280108	1296819	1313440	1329965	16
17	78516	95661	12746	29767	46717	63593	80388	97097	13716	30240	17
18	78802	95946	13030	30050	46999	63873	80667	97375	13993	30514	18
19	1179008	1196231	1213315	1230333	1247281	1264154	1280940	1297653	1314269	1330780	19
20	79375	96517	13509	30616	47563	64434	81225	97930	14545	31063	20
21	79661	96802	13883	30899	47845	64715	81504	98208	14821	31338	21
22	1179947	1197087	1214167	1231182	1248120	1264905	1281783	1298486	1315097	1331612	22
23	80333	97372	14451	31465	48408	65276	82062	98763	15373	31897	23
24	80519	97657	14735	31748	48690	65556	82342	99041	15649	32161	24
25	1180805	1197943	1215019	1232031	1248972	1265837	1282621	1299318	1315925	1332436	25
26	81091	98228	15304	32314	49263	66117	82900	99596	16201	32710	26
27	81377	98513	15688	32597	49545	66397	83179	99873	16477	32984	27
28	1181664	1198798	1216872	1232880	1249917	1266678	1283458	1300151	1316753	1333256	28
29	81950	99083	16166	33163	50098	66958	83736	100428	17039	33533	29
30	82236	99368	16440	33445	50380	67238	84015	100706	17305	33807	30
31	1182532	1199653	1216724	1233728	1250602	1267519	1284294	1300983	1317581	1334081	31
32	82808	99938	17008	34011	50943	67790	84573	101261	17856	34355	32
33	83094	1200223	17292	34294	51225	68079	84852	101538	18132	34629	33
34	1183380	1200608	1217575	1234577	1251506	1268359	1285131	1301815	1318408	1334903	34
35	83065	00703	17889	34859	51788	68640	85410	102093	18684	35178	35
36	83351	01078	18143	35142	52069	68920	85688	102370	18959	35452	36
37	1184237	1201363	1218427	1235425	1252361	1269200	1285967	1302647	1319235	1335726	37
38	84523	01648	18711	35708	52632	69480	86246	102924	19511	36090	38
39	84809	01933	18995	35990	52914	69760	86525	103202	19786	36374	39
40	1185005	1202218	1219279	1236273	1253195	1270040	1286803	1303479	1320062	1336548	40
41	85381	02502	19502	36556	53477	70320	87082	103756	20337	36821	41
42	85667	02787	19846	36838	53758	70600	87361	104033	20613	37095	42
43	1185952	1203072	1220130	1237121	1254039	1270881	1287639	1304310	1320889	1337369	43
44	86238	03357	20414	37403	54321	71161	87918	104587	21164	37643	44
45	86524	03642	20697	37686	54602	71440	88196	104864	21440	37917	45
46	1186810	1203927	1220981	1237968	1254883	1271720	1288475	1305141	1321715	1338191	46
47	87096	04211	21265	38251	55105	72000	88753	105418	21990	38464	47
48	87381	04496	21549	38534	55446	72280	89032	105695	22266	38738	48
49	1187667	1204781	1221832	1238816	1255727	1272560	1289310	1305972	1322541	1339012	49
50	87953	05096	22116	39098	56008	72840	89589	106249	22816	39285	50
51	88239	05350	22399	39381	56289	73120	89867	106526	23092	39559	51
52	1188524	1205635	1222683	1239663	1256571	1273400	1290146	1306803	1323367	1339833	52
53	88810	05920	22907	39948	56852	73679	90424	107080	23642	40100	53
54	89095	06204	23260	40226	57133	73959	90702	107367	23917	40380	54
55	1189381	1206480	1223534	1240510	1257414	1274239	1290981	1307633	1324193	1340653	55
56	89667	06773	23817	40793	57695	74519	91259	107910	24468	40927	56
57	89952	07058	24101	41075	57970	74798	91537	108187	24743	41200	57
58	1190238	1207343	1224384	1241357	1258257	1275078	1291815	1308484	1325018	1341473	58
59	90523	07627	24668	41640	58538	75358	92004	108740	25293	41747	59
60	90809	07912	24951	41922	58810	75637	92272	109017	25568	42020	60

Parts for Seconds.

(v.)

	100°		101°		102°		103°		104°		105°		106°		107°		108°		109°		110°	
"	0'	30"	0'	30"	0'	30"	0'	30"	0'	30"	0'	30"	0'	30"	0'	30"	0'	30"	0'	30"	0'	"
1	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	1
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3	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	3
4	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	4
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6	29	29	29	29	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	27	27	6
7	33	33	33	33	33	33	33	33	33	33	33	33	33	33	32	32	32	32	32	32	32	7
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12	57	57	57	57	57	57	57	57	56	56	56	56	56	56	55	55	55	55	55	55	55	12
13	62	62	62	62	62	62	61	61	61	61	61	61	60	60	60	60	60	60	60	60	60	13
14	67	67	67	67	66	66	66	66	66	66	65	65	65	65	65	65	64	64	64	64	64	14
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18	86	86	86	86	85	85	85	85	85	84	84	84	84	84	83	83	83	83	82	82	82	18
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35	167	167	167	166	166	166	165	165	165	164	164	164	163	163	162	162	161	161	160	160	159	35
36	172	172	171	171	171	170	170	170	169	169	169	168	168	167	167	166	166	166	165	165	164	36
37	177	176	176	176	175	175	175	174	174	174	173	173	172	172	172	171	171	170	170	169	169	37
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47	224	224	224	223	223	222	222	222	221	221	220	220	219	219	218	217	217	216	215	215	214	47
48	229	229	228	228	228	227	227	226	226	226	225	224	224	223	223	222	221	221	220	219	219	48
49	234	234	233	233	232	232	231	231	231	230	229	229	228	228	227	226	225	225	224	223	223	49
50	239	238	238	238	237	237	236	236	235	235	234	234	233	233	232	231	231	230	229	229	228	50
51	243	243	243	242	242	241	241	240	240	239	239	238	238	237	236	236	235	234	234	233	232	51
52	248	248	247	247	247	246	246	245	245	244	243	243	242	242	241	240	240	239	238	237	237	52
53	253	252	252	252	251	251	250	250	249	249	248	248	247	246	246	245	244	244	243	242	241	53
54	258	257	257	257	256	256	255	255	254	253	253	252	252	251	250	250	249	248	248	247	246	54
55	263	262	262	261	261	260	260	259	259	258	258	257	256	256	255	254	254	253	252	251	251	55
56	267	267	267	266	266	265	265	264	263	263	262	262	261	260	260	259	258	257	256	256	255	56
57	272	272	271	271	271	270	270	269	268	268	267	266	266	265	264	264	263	262	261	260	260	57
58	277	276	276	276	275	275	274	273	273	272	272	271	270	270	269	268	267	267	266	265	264	58
59	282	281	281	280	280	279	279	278	277	277	276	276	275	274	274	273	272	271	270	270	269	59
60	286	286	286	285	284	284	283	283	282	282	281	280	280	279	278	277	277	276	275	274	273	60

(v.)

Nat. Versines.

	110°	111°	112°	113°	114°	115°	116°	117°	118°	119°	
0	1342020	1358368	1374667	1390731	1406737	1422618	1438371	1453991	1469472	1484810	0
1	1342294	1358640	1374876	1390990	1407002	1422862	1438633	1454250	1469728	1485064	1
2	42567	58911	75146	91267	107268	23146	38804	54509	69985	85318	2
3	42840	59183	75416	91534	107534	23409	39155	54768	70242	85573	3
4	1343113	1359454	1375685	1391802	1407799	1423673	1439417	1455027	1470499	1485837	4
5	43367	59725	75955	92070	108065	23936	39678	55286	70755	86081	5
6	43660	59997	76224	92337	108331	24190	39939	55545	71012	86336	6
7	1343933	1360268	1376494	1392605	1408590	1424463	1440200	1455804	1471260	1486590	7
8	44206	60540	76763	92872	108862	24726	40462	56063	71525	86844	8
9	44479	60811	77033	93140	109127	24980	40723	56322	71782	87098	9
10	1344752	1361082	1377302	1393407	1409393	1425253	1440904	1456580	1472038	1487352	10
11	45025	61353	77571	93675	109558	25616	41245	56839	72294	87606	11
12	45298	61625	77841	93942	109823	25779	41506	57098	72551	87960	12
13	1345571	1361896	1378110	1394209	1410188	1426043	1441767	1457357	1472807	1488114	13
14	45844	62167	78379	94477	10454	26306	42028	57615	73063	88367	14
15	46117	62438	78649	94744	10719	26569	42289	57874	73320	88621	15
16	1346390	1362709	1378918	1395011	1410984	1426832	1442550	1458133	1473570	1488853	16
17	46663	62980	79187	95278	11249	27095	42810	58391	73832	89129	17
18	46936	63251	79456	95546	11514	27358	43071	58660	74088	89386	18
19	1347209	1363522	1379725	1395818	1411780	1427621	1443332	1458908	1474344	1489636	19
20	47481	63793	79994	96080	12045	27884	43503	59167	74600	89890	20
21	47754	64064	80263	96347	12310	28147	43853	59425	74856	90143	21
22	1348027	1364335	1380532	1396614	1412575	1428410	1444114	1459683	1475112	1490397	22
23	48290	64606	80801	96881	12840	28672	44375	59942	75368	90650	23
24	48572	64877	81070	97148	13104	28935	44635	60200	75624	90904	24
25	1348845	1365148	1381339	1397415	1413369	1429198	1444886	1460458	1475880	1491157	25
26	49117	65418	81608	97682	13634	29461	45156	60716	76136	91411	26
27	49390	65689	81877	97949	13899	29723	45417	60974	76392	91664	27
28	1349662	1365960	1382146	1398216	1414164	1429986	1445677	1461233	1476647	1491917	28
29	49935	66231	82415	98482	14429	30249	45938	61491	76903	92170	29
30	50207	66501	82683	98749	14693	30511	46198	61749	77159	92424	30
31	1350480	1366772	1382952	1399016	1414958	1430774	1446458	1462007	1477414	1492677	31
32	50752	67043	83221	99283	15223	31036	46718	62265	77670	92930	32
33	51025	67313	83490	99549	15487	31299	46979	62523	77926	93183	33
34	1351297	1367584	1383758	1399816	1415752	1431561	1447230	1462780	1478181	1493436	34
35	51560	67854	84027	100063	16018	31823	47489	63038	78436	93689	35
36	51842	68125	84295	100349	16281	32086	47759	63296	78692	93942	36
37	1352114	1368395	1384564	1400616	1416545	1432348	1448019	1463554	1478947	1494195	37
38	52386	68665	84832	100882	16810	32610	48279	63812	79203	94448	38
39	52658	68936	85101	101149	17074	32873	48539	64069	79458	94701	39
40	1352931	1369206	1385369	1401415	1417339	1433135	1448799	1464327	1479713	1494953	40
41	53203	69477	85638	101681	17693	33397	49059	64585	79968	95206	41
42	53476	69747	85906	101948	17967	33659	49319	64842	80224	95459	42
43	1353747	1370017	1386174	1402214	1418131	1433921	1449579	1465100	1480479	1495711	43
44	54019	70287	86443	102480	18306	34183	49839	65357	80734	95964	44
45	54291	70557	86711	102747	18569	34445	50098	65616	80993	96217	45
46	1354563	1370828	1386979	1403013	1418924	1434707	1450358	1465872	1481244	1496469	46
47	54835	71098	87247	103279	19188	34969	50618	66129	81499	96722	47
48	55107	71368	87516	103545	19452	35231	50878	66387	81754	96974	48
49	1355379	1371638	1387784	1403811	1419716	1435493	1451137	1466641	1482009	1497226	49
50	55651	71908	88052	104078	19980	35755	51397	66901	82263	97479	50
51	55923	72178	88320	104344	20244	36017	51656	67158	82518	97731	51
52	1356194	1372448	1388588	1404610	1420508	1436278	1451916	1467416	1482773	1497983	52
53	56466	72718	88566	104876	20772	36540	52175	67673	83028	98236	53
54	56738	72988	88834	105142	21036	36802	52435	67930	83282	98489	54
55	1357010	1373258	1389392	1405408	1421300	1437063	1452604	1468187	1483537	1498740	55
56	57281	73528	89660	105673	21563	37325	52954	68444	83792	98993	56
57	57553	73797	89928	105939	21827	37587	53213	68701	84046	99244	57
58	1357825	1374067	1390106	1406205	1422091	1437848	1453472	1468950	1484301	1499496	58
59	58096	74337	90463	106471	22355	38110	53731	69215	84555	99748	59
60	58368	74607	90731	106737	22618	38371	53991	69472	84810	100000	60

Parts for Seconds.

(v.)

	110°		111°		112°		113°		114°		115°		116°		117°		118°		119°		120°	
	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	
1	5	5	5	5	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	1
2	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	8	8	8	2
3	14	14	14	14	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	3
4	18	18	18	18	18	18	18	18	18	18	18	18	17	17	17	17	17	17	17	17	17	4
5	23	23	23	23	22	22	22	22	22	22	22	22	22	22	21	21	21	21	21	21	21	5
6	27	27	27	27	27	27	27	27	27	26	26	26	26	26	26	26	26	26	25	25	25	6
7	32	32	32	32	31	31	31	31	31	31	31	31	31	30	30	30	30	30	30	30	29	7
8	36	36	36	36	36	36	36	36	35	35	35	35	35	35	34	34	34	34	34	34	34	8
9	41	41	41	41	40	40	40	40	40	40	39	39	39	39	39	39	38	38	38	38	38	9
10	46	45	45	45	45	45	44	44	44	44	44	44	43	43	43	43	43	42	42	42	42	10
11	50	50	50	50	49	49	49	49	49	49	48	48	48	48	47	47	47	47	46	46	46	11
12	55	54	54	54	54	54	53	53	53	53	53	53	52	52	52	52	51	51	51	51	50	12
13	59	59	59	59	58	58	58	58	57	57	57	57	56	56	56	56	55	55	55	55	55	13
14	64	64	63	63	63	63	62	62	62	62	61	61	61	60	60	60	60	60	59	59	59	14
15	68	68	68	68	67	67	67	67	66	66	66	66	65	65	65	64	64	64	64	63	63	15
16	73	73	72	72	72	72	71	71	71	71	70	70	70	69	69	69	68	68	68	68	67	16
17	77	77	77	77	76	76	76	76	75	75	75	74	74	74	73	73	73	72	72	72	71	17
18	82	82	81	81	81	81	80	80	80	80	79	79	78	78	78	77	77	77	76	76	76	18
19	87	86	86	86	85	85	85	84	84	84	83	83	83	82	82	82	81	81	81	80	80	19
20	91	91	91	90	90	90	89	89	89	88	88	87	87	86	86	86	85	85	84	84	84	20
21	96	95	95	95	94	94	94	93	93	93	92	92	92	91	91	90	90	89	89	89	88	21
22	100	100	100	99	99	99	98	98	97	97	97	96	96	95	95	95	94	94	93	93	92	22
23	105	104	104	104	103	103	103	102	102	101	101	101	100	100	99	99	98	98	98	97	97	23
24	109	109	109	108	108	107	107	107	106	106	105	105	105	104	104	103	103	102	102	101	101	24
25	114	114	113	113	112	112	112	111	111	110	110	109	109	108	108	107	107	107	106	105	105	25
26	118	118	118	117	117	116	116	116	115	115	114	114	113	113	112	112	111	111	110	110	109	26
27	123	123	122	122	121	121	121	120	120	119	119	118	118	117	117	116	116	115	114	114	113	27
28	128	127	127	126	126	126	125	124	124	124	123	123	122	121	121	120	120	119	119	118	118	28
29	132	132	131	131	130	130	130	129	129	128	127	127	126	126	125	125	124	124	123	122	122	29
30	137	136	136	135	135	134	134	133	133	132	132	131	131	130	129	129	128	128	127	127	126	30
31	141	141	140	140	139	139	138	138	137	137	136	136	135	134	134	133	133	132	131	131	130	31
32	146	145	145	144	144	143	143	142	142	141	141	140	139	139	138	138	137	136	136	135	134	32
33	150	150	149	149	148	148	147	147	146	146	145	144	144	143	143	142	141	141	140	139	139	33
34	155	154	154	153	153	152	152	151	151	150	149	149	148	148	147	146	146	145	144	143	143	34
35	159	159	158	158	157	157	156	156	155	154	154	153	153	152	151	150	150	150	149	148	147	35
36	164	163	163	162	162	161	161	160	159	159	158	158	157	156	156	155	154	153	153	152	151	36
37	169	168	167	167	166	166	165	164	164	163	163	162	161	161	160	159	158	158	157	156	155	37
38	173	173	172	171	171	170	169	168	168	167	166	166	165	164	163	163	162	162	161	160	160	38
39	178	177	177	176	175	175	174	173	173	172	171	171	170	169	168	168	167	166	165	165	164	39
40	182	182	181	180	180	179	179	178	177	176	176	175	174	174	173	172	171	170	170	169	168	40
41	187	186	186	185	184	184	183	182	182	181	180	179	179	178	177	176	176	175	174	173	172	41
42	191	191	190	189	189	188	187	186	186	185	185	184	183	182	181	181	180	179	178	177	176	42
43	196	195	195	194	193	193	192	191	190	190	189	188	187	187	186	185	184	183	182	181	181	43
44	200	200	199	198	198	197	197	196	195	194	193	193	192	191	190	189	188	187	187	186	185	44
45	205	204	204	203	202	201	201	200	199	199	198	197	196	195	194	193	193	192	191	190	189	45
46	210	209	208	207	207	206	205	205	204	203	202	201	200	200	199	198	197	196	195	194	193	46
47	214	213	213	212	211	211	210	209	208	207	207	206	205	204	203	202	201	200	199	198	197	47
48	219	218	217	217	216	215	214	213	213	212	211	210	209	208	207	206	205	205	204	203	202	48
49	223	222	222	221	220	220	219	218	217	216	216	214	214	213	212	211	210	209	208	207	206	49
50	228	227	226	226	225	224	223	222	221	221	220	219	218	217	216	215	214	213	212	211	210	50
51	232	232	231	230	229	228	228	227	226	225	224	223	222	221	220	219	218	217	216	215	214	51
52	237	236	235	235	234	233	232	231	230	229	228	228	227	226	225	224	223	221	220	219	218	52
53	241	241	240	239	238	237	237	236	235	234	233	232	231	230	229	228	227	226	225	224	223	53
54	246	245	244	244	243	242	241	240	239	238	237	236	235	234	233	232	231	230	229	228	227	54
55	251	250	249	248	247	246	245	245	244	243	242	241	240	239	238	236	235	234	233	232	231	55
56	255	254	253	253	252	251	250	249	248	247	246	245	244	243	242	241	240	239	237	236	235	56
57	260	259	258	257	256	255	254	253	252	251	250	249	248	247	246	245	244	243	242	240	239	57
58	264	263	262	262	261	260	259	258	257	256	255	254	253	252	251	249	248	247	246	245	244	58
59	269	268	267	266	265	264	263	262	261	260	259	258	257	256	255	254	253	251	250	249	248	59
60	273	272	272	271	270	269	268	267	266	265	264	263	261	260	259	258	257	256	254	253	252	60

(v.) Nat. Versines.											
	120°	121°	122°	123°	124°	125°	126°	127°	128°	129°	
0	1500000	1515038	1529919	1544630	1559193	1573576	1587785	1601815	1615662	1629320	0
1	1500252	1515287	1530166	1544883	1559434	1573815	1588021	1602047	1615891	1629546	1
2	00304	15537	30413	45127	59875	74653	88250	02280	16120	29772	2
3	00756	15786	30659	45371	59916	74291	88491	02512	16349	29998	3
4	1501007	1516035	1530906	1545615	1560157	1574529	1588726	1602744	1616578	1630224	4
5	01259	16284	31152	45858	60398	74767	88961	02976	16807	30450	5
6	01511	16533	31399	46102	60639	75005	89196	03208	17036	30676	6
7	1501762	1516782	1531645	1546346	1560880	1575243	1589431	1603440	1617265	1630902	7
8	02014	17031	31891	46589	61121	75481	89666	03672	17494	31127	8
9	02266	17280	32138	46833	61361	75719	89901	03904	17722	31353	9
10	1502517	1517529	1532384	1547076	1561602	1575967	1590136	1604136	1617961	1631578	10
11	02769	17778	32630	47320	61643	76193	90371	04367	18180	31804	11
12	03020	18027	32876	47563	62083	76432	90606	04599	18408	32029	12
13	1503271	1518276	1533122	1547807	1562324	1576670	1590840	1604831	1618637	1632255	13
14	03523	18525	33369	48050	62665	76908	91075	05062	18865	32480	14
15	03774	18773	33615	48293	62905	77145	91310	05294	19094	32705	15
16	1504025	1519022	1533861	1548537	1563045	1577363	1591544	1605526	1619322	1632931	16
17	04277	19271	34107	48780	63280	77620	91779	05757	19651	33156	17
18	04528	19519	34352	49023	63526	77858	92013	05988	19779	33381	18
19	1504779	1519768	1534598	1549266	1563766	1578095	1592248	1606320	1620007	1633606	19
20	05030	20016	34844	49509	64007	78332	92482	06451	20236	33831	20
21	05281	20265	35090	49752	64247	78570	92716	06682	20464	34056	21
22	1505533	1520513	1535336	1549995	1564487	1578807	1592951	1606914	1620892	1634281	22
23	05783	20761	35581	50238	64727	79044	93185	07145	20920	34506	23
24	06034	21010	35827	50481	64967	79281	93419	07376	21148	34731	24
25	1506283	1521258	1536072	1550724	1565207	1579518	1593653	1607607	1621376	1634955	25
26	06536	21500	36318	50906	65447	79755	93887	07638	21604	35180	26
27	06786	21754	36563	51209	65687	79992	94121	08069	21831	35405	27
28	1507037	1522002	1536800	1551462	1565927	1580229	1594365	1608300	1622059	1635629	28
29	07288	22251	37154	51694	66107	80460	94580	08531	22287	35654	29
30	07538	22499	37300	51937	66406	80703	94823	08761	22515	35878	30
31	1507789	1522747	1537545	1552100	1566646	1580940	1595057	1608992	1622742	1636503	31
32	08040	22996	37790	52422	66886	81177	95290	09223	22970	36527	32
33	08290	23242	38035	52665	67125	81413	95524	09454	23197	36751	33
34	1508541	1523400	1538281	1552907	1567365	1581650	1595758	1609684	1623425	1636976	34
35	08791	23738	38526	53149	67603	81800	95991	09915	23652	37290	35
36	09041	23986	38771	53392	67844	82123	96225	10145	23880	37424	36
37	1509292	1524234	1539016	1553634	1568083	1582300	1596458	1610376	1624107	1637648	37
38	09542	24481	39201	53876	68323	82596	96692	10606	24334	37872	38
39	09792	24729	39506	54118	68562	82832	96926	10836	24561	38096	39
40	1510043	1524977	1539751	1554360	1568801	1583069	1597159	1611067	1624789	1638320	40
41	10293	25224	39996	54602	69040	83305	97392	11297	25016	38268	41
42	10543	25472	40240	54844	69280	83541	97625	11527	25243	38493	42
43	1510793	1525719	1540485	1555086	1569519	1583777	1597858	1611757	1625470	1638992	43
44	11043	25967	40730	55328	69758	84014	98092	11987	25697	39215	44
45	11293	26214	40975	55570	69997	84250	98326	12217	25924	39439	45
46	1511543	1526461	1541219	1555812	1570236	1584480	1598558	1612447	1626150	1639663	46
47	11793	26709	41464	56054	70475	84722	98791	12677	26377	39686	47
48	12043	26956	41708	56296	70714	84958	99024	12907	26604	40110	48
49	1512293	1527203	1541953	1556537	1570952	1585194	1599257	1613137	1626831	1640333	49
50	12543	27450	42197	56779	71191	85429	99489	13367	27057	40557	50
51	12792	27697	42442	57021	71430	85665	99723	13596	27284	40780	51
52	1513042	1527944	1542686	1557262	1571669	1585901	1599955	1613826	1627510	1641003	52
53	13292	28191	42930	57504	71907	86137	1000188	14068	27737	41295	53
54	13541	28438	43174	57745	72146	86372	100260	14300	27963	41520	54
55	1513791	1528685	1543419	1557987	1572384	1586608	1600653	1614515	1628189	1641673	55
56	14040	28932	43603	58228	72623	86844	100805	14744	28416	41896	56
57	14290	29179	43907	58469	72861	87079	101118	14974	28642	42119	57
58	1514539	1529426	1544151	1558711	1573100	1587315	1601350	1615203	1628868	1642342	58
59	14789	29673	44395	58952	73338	87550	101583	15432	29094	42565	59
60	15038	29919	44639	59193	73576	87785	101815	15662	29320	42789	60

Parts for Seconds.

(v.)

	120°		121°		122°		123°		124°		125°		126°		127°		128°		129°		130°	
°	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'
1	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	1
2	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	7	7	2
3	12	13	12	12	12	12	12	12	12	12	12	12	12	12	12	12	11	11	11	11	11	3
4	17	17	17	17	16	16	16	16	16	16	16	16	16	15	15	15	15	15	15	15	15	4
5	21	21	21	21	21	20	20	20	20	20	20	20	20	19	19	19	19	19	19	19	19	5
6	25	25	25	25	25	25	24	24	24	24	24	24	24	23	23	23	23	23	23	22	22	6
7	29	29	29	29	29	29	28	28	28	28	28	28	27	27	27	27	27	27	26	26	26	7
8	34	33	33	33	33	33	32	32	32	32	32	32	31	31	31	31	31	30	30	30	30	8
9	38	38	37	37	37	37	37	36	36	36	36	35	35	35	35	35	34	34	34	34	33	9
10	42	42	42	41	41	41	41	40	40	40	40	39	39	39	39	38	38	38	37	37	37	10
11	46	46	46	45	45	45	45	44	44	44	44	43	43	43	43	42	42	42	41	41	41	11
12	50	50	50	50	49	49	49	49	49	49	48	48	48	47	47	46	46	46	45	45	45	12
13	55	54	54	54	53	53	53	53	52	52	52	51	51	51	50	50	50	49	49	49	48	13
14	59	58	58	58	58	57	57	57	56	56	56	55	55	55	54	54	53	53	52	52	52	14
15	63	63	62	62	62	61	61	61	60	60	60	59	59	58	58	58	57	57	56	56	56	15
16	67	67	66	66	66	65	65	65	64	64	64	63	63	62	62	62	61	61	60	60	59	16
17	71	71	71	71	70	70	70	69	69	69	68	68	67	67	66	66	65	65	64	64	63	17
18	75	75	75	74	74	74	73	73	72	72	71	71	71	70	70	69	69	68	68	67	67	18
19	80	79	79	79	78	78	77	77	76	76	75	75	74	74	73	73	72	72	71	71	71	19
20	84	84	83	83	82	82	81	81	80	80	79	79	78	78	77	77	76	76	75	75	74	20
21	88	88	87	87	86	86	85	85	84	84	83	83	82	82	81	81	80	80	79	79	78	21
22	92	92	91	91	90	90	89	89	88	88	87	87	86	86	85	85	84	83	83	82	82	22
23	97	96	96	95	95	94	94	93	92	92	91	91	90	90	89	88	87	87	86	85	85	23
24	101	100	100	99	99	98	98	97	96	96	95	95	94	94	93	92	92	91	90	90	89	24
25	105	104	104	103	103	102	102	101	100	100	99	99	98	97	97	96	96	95	94	94	93	25
26	109	109	108	107	107	106	106	105	104	104	103	103	102	101	101	100	99	99	98	97	97	26
27	113	113	112	112	111	110	110	109	109	108	107	107	106	105	105	104	103	102	102	101	100	27
28	118	117	116	116	115	114	114	113	113	112	111	111	110	109	109	108	107	106	105	105	104	28
29	122	121	121	120	119	119	118	117	117	116	115	114	114	113	112	112	111	110	109	108	108	29
30	126	125	125	124	123	123	122	121	121	120	119	118	118	117	116	115	115	114	113	112	111	30
31	130	130	129	129	127	127	126	125	125	124	123	122	122	121	120	119	118	118	117	116	115	31
32	134	134	133	132	132	131	130	129	129	128	127	126	126	125	124	123	122	121	120	120	119	32
33	139	138	137	136	136	135	134	133	133	132	131	130	129	129	128	127	126	125	124	123	123	33
34	143	142	141	141	140	139	138	137	137	136	135	134	133	133	132	131	130	129	128	127	126	34
35	147	146	145	145	144	143	142	141	141	140	139	138	137	136	136	135	134	133	132	131	130	35
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37	155	155	154	153	152	151	150	150	149	148	147	146	145	144	143	142	141	140	139	139	137	37
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39	164	163	162	161	160	159	158	157	156	155	154	153	152	151	150	149	148	147	146	145	145	39
40	168	167	166	165	164	163	162	161	160	159	158	157	156	155	154	153	152	151	150	149	149	40
41	172	171	170	169	168	167	166	165	164	163	162	161	160	159	158	157	156	155	154	153	152	41
42	176	175	175	174	173	172	171	170	169	168	167	166	165	164	163	162	160	159	158	157	156	42
43	181	180	179	178	177	176	175	174	173	172	171	170	169	168	166	165	164	163	162	161	160	43
44	185	184	183	182	181	180	179	178	177	176	175	174	173	171	170	169	168	167	166	165	163	44
45	189	188	187	186	185	184	183	182	181	180	179	178	177	175	174	173	172	171	170	169	167	45
46	193	192	191	191	189	188	187	186	185	184	183	182	180	179	178	177	176	175	173	172	171	46
47	197	196	195	194	193	192	191	190	189	188	187	185	184	183	182	181	180	178	177	176	175	47
48	202	201	200	199	198	197	196	195	194	193	192	191	190	188	187	186	185	183	182	181	180	48
49	206	205	204	203	201	200	199	198	197	196	195	193	192	191	190	188	187	186	185	183	182	49
50	210	209	208	207	206	204	203	202	201	200	199	197	196	195	194	192	191	190	188	187	186	50
51	214	213	212	211	210	209	207	206	205	204	203	201	200	199	197	196	195	194	192	191	189	51
52	218	217	216	215	214	213	211	210	209	208	207	205	204	203	201	200	199	197	196	195	193	52
53	223	221	220	219	218	217	216	214	213	212	210	209	208	207	205	204	203	201	200	198	197	53
54	227	226	224	223	222	221	220	218	217	216	214	213	212	210	209	208	206	205	203	202	201	54
55	231	230	229	227	226	225	224	222	221	220	218	217	216	214	213	212	210	209	207	206	204	55
56	235	234	233	232	230	229	228	226	225	224	222	221	220	218	217	216	214	212	211	209	208	56
57	239	238	237	236	234	233	232	230	229	228	226	225	224	222	221	219	218	216	215	213	212	57
58	244	242	241	240	238	237	236	234	233	232	230	229	228	226	225	223	222	220	219	217	215	58
59	248	246	246	244	243	241	240	239	237	236	234	233	231	230	228	227	225	224	222	221	219	59
60	252	251	249	248	247	245	244	243	241	240	238	237	235	234	232	231	229	228	226	224	223	60

(v.) Nat. Versines											
	130°	131°	132°	133°	134°	135°	136°	137°	138°	139°	
0	1642788	1656059	1669131	1681908	1694650	1707107	1719340	1731354	1743145	1754710	0
1	1643010	1656279	1669347	1682211	1694868	1707312	1719542	1731552	1743339	1754900	1
2	43233	56498	69562	82424	95077	107518	119744	131750	143534	155091	2
3	43456	56717	69779	82636	95286	107724	119946	131949	143729	155282	3
4	1643679	1656937	1669995	1682849	1695495	1707929	1720148	1732147	1743923	1755472	4
5	43901	57156	70211	83061	95704	108135	120349	132345	144117	155663	5
6	44124	57375	70427	83274	95913	108340	120551	132443	144312	155854	6
7	1644346	1657594	1670642	1683486	1696122	1708545	1720753	1732741	1744500	1756044	7
8	44509	57814	70868	83698	96331	108750	120954	132939	144700	156254	8
9	44791	58033	71074	83911	96539	108956	121156	133137	144894	156412	9
10	1645013	1658252	1671290	1684123	1696748	1709161	1721367	1733355	1745088	1756615	10
11	45236	58471	71505	84335	96957	109366	121559	133532	145292	156840	11
12	45458	58690	71721	84547	97165	109571	121760	133730	145476	156991	12
13	1645680	1658908	1671936	1684760	1697374	1709776	1721962	1733928	1745670	1757185	13
14	45992	59127	72152	84971	97582	109981	122163	134125	145864	157375	14
15	46124	59346	72367	85183	97791	10185	122364	134323	146057	157563	15
16	1646346	1659563	1672582	1685395	1697999	1710390	1722565	1734520	1746251	1757755	16
17	46568	59783	72707	85607	98207	10595	122766	134717	146445	157945	17
18	46790	60002	73013	85818	98415	10800	122967	134915	146638	158134	18
19	1647012	1660220	1673228	1686030	1698623	1711004	1723168	1735112	1746832	1758324	19
20	47233	60439	73443	86242	98832	11209	123369	135399	147023	158514	20
21	47455	60657	73658	86453	99040	11413	123570	135596	147218	158700	21
22	1647677	1660875	1673873	1686665	1699246	1711617	1723771	1735703	1747412	1758894	22
23	47898	61094	74088	86876	99456	11822	123971	135900	147605	159082	23
24	48120	61312	74302	87088	99663	12026	124172	136097	147798	159271	24
25	1648341	1661530	1674517	1687290	1699871	1712230	1724372	1736294	1747991	1759461	25
26	48563	61748	74732	87510	100079	12434	124573	136401	148184	159650	26
27	48784	61966	74947	87721	100287	12639	124773	136603	148377	159839	27
28	1649006	1662184	1675161	1687933	1700494	1712843	1724974	1736884	1748570	1760026	28
29	49227	62402	75376	88144	100702	13047	125174	137081	148763	160217	29
30	49448	62620	75590	88355	100909	13250	125374	137277	148956	160406	30
31	1649669	1662838	1675805	1688566	1701117	1713454	1725575	1737474	1749148	1760595	31
32	49890	63056	76019	88777	101324	13658	125775	137670	149341	160784	32
33	50111	63273	76233	88987	101531	13862	125976	137867	149534	160972	33
34	1650332	1663491	1676448	1689198	1701739	1714066	1726175	1738063	1749726	1761161	34
35	50553	63709	76662	89409	101946	14269	126375	138259	149919	161350	35
36	50774	63926	76876	89620	102153	14473	126576	138455	150111	161538	36
37	1650995	1664144	1677200	1689930	1702360	1714676	1726775	1738632	1750303	1761727	37
38	51216	64361	77304	90041	102567	14880	126974	138848	150496	161915	38
39	51437	64579	77518	90251	102774	15083	127174	139044	150688	162104	39
40	1651657	1664796	1677732	1690462	1702981	1715286	1727374	1739239	1750880	1762292	40
41	51878	65013	77946	90672	103188	15490	127573	139435	151072	162480	41
42	52098	65230	78160	90882	103395	15693	127773	139631	151264	162668	42
43	1652319	1665448	1678373	1691093	1703601	1715898	1727972	1739827	1751456	1762856	43
44	52539	65665	78587	91303	103808	16099	128172	140023	151648	163045	44
45	52760	65882	78801	91513	104016	16302	128371	140218	151840	163233	45
46	1652980	1666099	1679014	1691723	1704221	1716505	1728570	1740414	1752032	1763430	46
47	53200	66316	79229	91933	104428	16708	128770	140609	152223	163608	47
48	53421	66533	79441	92143	104634	16911	128969	140805	152415	163796	48
49	1653641	1666749	1679655	1692353	1704841	1717113	1729168	1741000	1752607	1763984	49
50	53861	66966	79868	92563	105047	17316	129367	141195	152796	164171	50
51	54081	67183	80081	92773	105253	17519	129566	141391	152989	164359	51
52	1654301	1667399	1680295	1692983	1705459	1717721	1729765	1741536	1753181	1764647	52
53	54621	67616	80508	93192	105665	17924	129963	141781	153372	164734	53
54	54741	67833	80721	93402	105872	18126	130162	141976	153563	164921	54
55	1654961	1668049	1680934	1693611	1706078	1718329	1730361	1742171	1753755	1765109	55
56	55180	68266	81147	93821	106284	18331	130560	142366	153946	165296	56
57	55400	68482	81360	94030	106489	18533	130758	142561	154137	165483	57
58	1655620	1668698	1681573	1694240	1706805	1718936	1730957	1742755	1754328	1765670	58
59	55840	68914	81786	94449	106901	19139	131155	142950	154519	165857	59
60	56059	69131	81998	94658	107107	19340	131354	143145	154716	166044	60

Parts for Seconds.

(v.)

	130°		131°		132°		133°		134°		135°		136°		137°		138°		139°		140°		
"	0'	30"	0'	30"	0'	30"	0'	30"	0'	30"	0'	30"	0'	30"	0'	30"	0'	30"	0'	30"	0'	30"	"
1	4	4	4	4	4	4	4	4	3	3	3	3	3	3	3	3	3	3	3	3	3	1	
2	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	6	6	6	6	2	
3	11	11	11	11	11	11	11	11	10	10	10	10	10	10	10	10	10	10	10	9	9	3	
4	15	15	15	15	14	14	14	14	14	14	14	14	13	13	13	13	13	13	13	13	13	4	
5	19	18	18	18	18	18	18	18	17	17	17	17	17	17	17	16	16	16	16	16	16	5	
6	22	22	22	22	22	21	21	21	21	21	21	20	20	20	20	20	19	19	19	19	19	6	
7	26	26	26	25	25	25	25	25	24	24	24	24	23	23	23	23	22	22	22	22	22	7	
8	30	29	29	29	29	28	28	28	28	28	27	27	27	27	26	26	26	26	25	25	25	8	
9	33	33	33	33	32	32	32	32	31	31	31	31	30	30	30	29	29	29	28	28	28	9	
10	37	37	37	36	36	36	35	35	35	35	34	34	34	33	33	33	32	32	32	31	31	10	
11	41	41	40	40	40	39	39	39	38	38	38	37	37	37	36	36	36	35	35	35	34	11	
12	45	44	44	44	43	43	43	42	42	41	41	41	40	40	40	39	39	39	38	38	37	12	
13	48	48	47	47	46	46	46	45	45	45	44	44	43	43	43	42	42	41	41	41	41	13	
14	52	52	51	51	50	50	50	49	49	48	48	47	47	47	46	46	45	45	44	44	44	14	
15	56	55	55	54	54	54	53	53	52	52	51	51	51	50	50	49	49	48	48	47	47	15	
16	59	59	59	58	58	57	57	56	56	55	55	54	54	53	53	52	52	51	51	50	50	16	
17	63	63	62	62	61	61	60	60	59	59	58	58	57	57	56	56	55	55	54	54	53	17	
18	67	66	66	65	65	64	64	63	63	62	62	61	61	60	60	59	58	58	57	57	56	18	
19	71	70	70	69	68	68	67	67	66	66	65	65	64	63	63	62	62	61	60	60	59	19	
20	74	74	73	73	72	71	71	70	70	69	69	68	67	67	66	65	65	64	64	63	62	20	
21	78	77	77	76	76	75	74	74	73	73	72	71	70	70	69	69	68	67	67	66	65	21	
22	82	81	80	80	79	79	78	77	77	76	75	75	74	73	73	72	71	71	70	69	69	22	
23	85	85	84	84	83	82	82	81	80	80	79	78	77	77	76	75	75	74	73	72	72	23	
24	89	88	88	87	86	86	85	84	84	83	82	82	81	80	79	79	78	77	76	76	75	24	
25	93	92	91	91	90	89	89	88	87	86	85	85	84	83	83	82	81	80	80	79	78	25	
26	97	96	95	94	94	93	92	91	91	90	89	88	87	87	86	85	84	84	83	82	81	26	
27	100	100	99	99	97	97	96	95	94	93	92	92	91	90	89	88	88	87	86	85	84	27	
28	104	103	102	102	101	100	99	98	98	97	96	96	94	93	93	92	91	90	89	88	87	28	
29	108	107	106	105	104	104	103	102	101	100	99	99	98	97	96	95	94	93	92	91	90	29	
30	111	111	110	109	108	107	106	105	105	104	103	102	101	100	99	98	97	96	95	94	93	30	
31	115	114	113	113	112	111	110	109	108	107	106	105	104	103	103	102	101	100	99	98	97	31	
32	119	118	117	116	115	114	113	112	111	110	109	108	107	106	105	104	103	102	101	100	99	32	
33	123	122	121	120	119	118	117	116	115	114	113	112	111	110	109	108	107	106	105	104	103	33	
34	126	125	124	123	123	121	121	120	119	118	117	116	114	113	112	111	110	109	108	107	106	34	
35	130	129	128	127	126	125	124	123	122	121	120	119	118	117	116	115	114	112	111	110	109	35	
36	134	133	132	131	130	129	128	127	126	124	123	122	121	120	119	118	117	116	115	113	112	36	
37	137	136	135	134	133	132	131	130	129	128	127	126	125	123	122	121	120	119	118	117	115	37	
38	141	140	139	138	137	136	135	134	133	131	130	129	128	127	126	124	123	122	121	120	118	38	
39	145	144	143	142	141	139	138	137	136	135	134	132	131	130	129	128	126	125	124	123	122	39	
40	149	147	146	145	144	143	142	141	139	138	137	136	135	133	132	131	130	128	127	126	125	40	
41	152	151	150	149	148	147	145	144	143	142	141	139	138	137	136	134	133	132	130	129	128	41	
42	156	155	154	152	151	150	149	148	146	145	144	143	141	140	139	138	136	135	134	132	131	42	
43	160	159	157	156	155	154	152	151	150	149	147	146	145	144	142	141	139	138	137	135	134	43	
44	163	162	161	160	159	157	156	155	153	152	151	150	148	147	145	144	143	141	140	139	137	44	
45	167	166	165	163	162	161	160	158	157	156	154	153	152	150	149	147	146	145	143	142	140	45	
46	171	170	168	167	166	164	163	162	160	159	158	156	155	154	152	151	149	148	146	145	143	46	
47	175	173	172	171	169	168	167	165	164	163	161	160	158	157	155	154	152	151	150	148	146	47	
48	178	177	176	174	173	172	170	169	167	166	165	163	162	160	159	157	156	154	153	151	150	48	
49	182	181	179	178	177	175	174	172	171	169	168	167	165	164	162	160	159	157	156	154	153	49	
50	186	184	183	182	180	179	177	176	174	173	171	170	168	167	165	164	162	161	160	157	156	50	
51	189	188	187	185	184	182	181	179	178	176	175	173	172	170	169	167	165	164	162	161	159	51	
52	193	192	190	189	187	186	184	183	181	180	178	177	175	174	172	170	169	167	165	164	162	52	
53	197	195	194	192	191	189	188	186	185	183	182	180	178	177	175	174	172	170	169	167	165	53	
54	201	199	198	196	195	193	191	190	188	187	185	184	182	180	179	177	175	173	172	170	168	54	
55	204	203	201	200	198	197	195	193	192	190	189	187	185	184	182	180	178	177	175	173	171	55	
56	208	206	205	203	202	200	199	197	195	194	192	190	189	187	185	183	182	180	178	176	174	56	
57	212	210	209	207	205	204	202	200	199	197	195	194	192	190	188	187	185	183	181	180	178	57	
58	215	214	212	211	209	207	206	204	202	200	199	197	195	194	192	190	188	186	184	183	181	58	
59	219	218	216	214	213	211	209	207	206	204	202	201	199	197	195	193	191	190	188	186	184	59	
60	223	221	219	219	216	214	213	211	209	207	206	204	202	200	198	196	195	193	190	189	187	60	

(v.)

Nat. Versines.

	140°	141°	142°	143°	144°	145°	146°	147°	148°	149°	
0	1766044	1777146	1788011	1798636	1809017	1819152	1829038	1838671	1848048	1857167	0
1	1766231	1777329	1788190	1798811	1809188	1819319	1829200	1838829	1848202	1857317	1
2	66418	77512	88309	98985	00359	19486	29363	38987	48356	57467	2
3	66605	77695	88548	99160	00530	19652	29525	39146	48510	57616	3
4	1766792	1777878	1788727	1799335	1800700	1819819	1829688	1839304	1848664	1857766	4
5	60979	78090	88905	99510	00871	19985	29850	39462	48818	57916	5
6	67165	78243	89084	99685	10042	20159	30012	39620	48972	58005	6
7	1767352	1778426	1789263	1799859	1810212	1820318	1830175	1839778	1849125	1858214	7
8	67538	78608	89441	1800034	10383	20485	30337	39936	49279	58364	8
9	67725	78791	89620	00208	10563	20651	30499	40094	49433	58513	9
10	1767911	1778973	1789798	1800383	1810723	1820817	1830661	1840251	1849586	1858662	10
11	68097	79156	89977	00557	10894	20983	30823	40409	49739	58811	11
12	68284	79338	90155	00731	11064	21149	30985	40567	49893	58960	12
13	1768470	1779520	1790333	1800906	1811234	1821315	1831146	1840724	1850046	1859109	13
14	68636	79702	90512	01080	11404	21481	31308	40882	50199	59258	14
15	68842	79885	90690	01254	11674	21647	31470	41038	50352	59466	15
16	1769028	1780067	1790868	1801428	1811744	1821813	1831631	1841196	1850505	1859555	16
17	69214	80249	91046	01802	11914	21978	31793	41354	50658	59704	17
18	69400	80430	91224	01776	12084	22144	31954	41511	50811	59852	18
19	1769585	1780612	1791401	1801950	1812253	1822310	1832116	1841668	1850961	1859991	19
20	69771	80794	91579	02123	12423	22475	32277	41825	51117	60149	20
21	69957	80976	91757	02297	12593	22641	32438	41982	51269	60298	21
22	1770142	1781167	1791935	1802471	1812762	1822806	1832599	1842139	1851422	1860446	22
23	70328	81339	92112	02644	12931	22971	32760	42296	51575	60584	23
24	70513	81521	92290	02818	13101	23136	32921	42462	51727	60742	24
25	1770699	1781702	1792467	1802991	1813270	1823302	1832999	1842609	1851879	1860880	25
26	70884	81863	92645	03164	13439	23467	33243	42766	52032	61038	26
27	71069	82065	92822	03338	13608	23632	33411	42922	52184	61186	27
28	1771254	1782246	1792999	1803511	1813778	1823797	1833565	1843079	1852336	1861334	28
29	71440	82427	93176	03684	13947	23961	33725	43235	52488	61482	29
30	71625	82608	93353	03857	14116	24126	33886	43391	52640	61629	30
31	1771810	1782789	1793530	1804030	1814284	1824291	1834046	1843548	1852792	1861777	31
32	71995	82970	93707	04203	14453	24456	34207	43704	52944	61924	32
33	72179	83151	93884	04376	14622	24620	34367	43860	53096	62072	33
34	1772364	1783332	1794061	1804548	1814791	1824785	1834528	1844016	1853248	1862219	34
35	72549	83513	94238	04721	14859	24949	34680	44172	53399	62366	35
36	72734	83694	94415	04894	15128	25114	34848	44328	53561	62514	36
37	1772918	1783874	1794591	1805066	1815296	1825278	1835008	1844484	1853702	1862661	37
38	73103	84056	94708	05239	15465	25442	35168	44640	53854	62808	38
39	73287	84235	94944	05411	15633	25606	35328	44795	54006	62956	39
40	1773472	1784418	1795121	1805584	1815801	1825770	1835488	1844951	1854156	1863102	40
41	73656	84596	95297	05756	15970	25934	35648	45108	54308	63249	41
42	73840	84776	95474	05928	16138	26098	35807	45262	54459	63396	42
43	1774024	1784957	1795650	1806101	1816306	1826262	1835967	1845417	1854610	1863542	43
44	74209	85137	95826	06273	16474	26426	36127	45573	54761	63689	44
45	74393	85317	96002	06445	16642	26590	36286	45720	54912	63836	45
46	1774577	1785497	1796178	1806617	1816809	1826753	1836446	1845883	1855063	1863982	46
47	74761	85677	96354	06789	16977	26917	36605	46038	55214	64128	47
48	74945	85857	96530	06960	17145	27081	36764	46193	55364	64275	48
49	1775128	1786037	1796706	1807132	1817313	1827244	1836924	1846348	1855515	1864421	49
50	75312	86217	96882	07304	17440	27407	37083	46503	55666	64567	50
51	75496	86396	97057	07475	17648	27571	37242	46658	55816	64713	51
52	1775679	1786576	1797233	1807647	1817815	1827734	1837401	1846813	1855966	1864860	52
53	75863	86756	97408	07819	17982	27897	37560	46967	56117	65006	53
54	76046	86935	97584	07990	18150	28060	37719	47122	56267	65151	54
55	1776230	1787115	1797759	1808161	1818317	1828223	1837878	1847277	1856417	1865297	55
56	76413	87294	97935	08333	18411	28306	38036	47431	56567	65443	56
57	76597	87473	98110	08504	18651	28549	38195	47585	56718	65589	57
58	1776780	1787652	1798285	1808675	1818818	1828713	1838354	1847740	1856868	1865734	58
59	76963	87832	98460	08848	18985	28876	38512	47894	57017	65800	59
60	77146	88011	98636	09017	19152	29038	38671	48067	57167	66025	60

Parts for Seconds

(v.)

	140°		141°		142°		143°		144°		145°		146°		147°		148°		149°		150°	
"	0'	30"	0'	30"	0'	30"	0'	30"	0'	30"	0'	30"	0'	30"	0'	30"	0'	30"	0'	30"	0'	30"
1	■	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2	2	2	1
2	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	5	5	2
3	9	9	9	9	9	9	9	9	9	9	8	8	8	8	8	8	8	8	7	7	7	3
4	12	12	12	12	12	12	12	12	11	11	11	11	11	11	10	10	10	10	10	10	10	4
5	16	16	16	16	16	16	16	16	14	14	14	14	14	13	13	13	13	13	12	12	12	5
6	19	19	18	18	18	18	18	17	17	17	17	16	16	16	16	16	15	15	15	15	15	6
7	22	22	21	21	21	21	20	20	20	20	■	19	19	19	18	18	18	18	17	17	17	7
8	26	25	24	24	24	24	23	23	23	23	22	22	22	21	21	21	21	20	20	20	19	8
9	28	28	27	27	27	27	26	26	26	26	25	25	24	24	24	23	23	23	22	22	22	9
10	31	31	31	30	30	30	29	29	28	28	28	27	27	27	26	26	26	26	25	25	24	10
11	34	34	34	33	33	32	32	32	31	31	31	30	30	29	29	29	28	28	27	27	27	11
12	37	37	37	36	36	35	35	35	34	34	33	33	33	32	32	31	31	30	30	30	29	12
13	41	40	40	39	39	38	38	37	37	37	36	36	35	35	34	34	33	33	32	32	32	13
14	44	43	43	42	42	41	41	40	40	39	39	38	38	37	37	36	36	35	35	34	34	14
15	47	46	46	45	45	44	44	43	43	42	42	41	41	40	39	39	38	37	37	36	36	15
16	50	■	49	48	48	47	47	46	46	45	44	44	43	43	42	42	41	41	40	39	39	16
17	53	52	52	51	51	50	50	49	48	48	47	47	46	45	45	44	44	43	42	42	41	17
18	56	56	55	54	54	53	53	52	51	51	50	49	49	48	48	47	46	45	44	44	44	18
19	59	58	58	57	57	56	■	55	54	53	53	52	52	51	50	49	49	48	47	47	46	19
20	62	62	61	60	60	59	58	■	57	56	56	55	54	54	53	52	51	51	50	49	48	20
21	65	65	64	63	63	62	61	60	60	59	■	58	57	56	55	55	54	53	52	52	51	21
22	68	68	67	66	66	65	64	63	63	62	61	60	60	59	58	57	57	56	55	54	53	22
23	72	71	70	69	69	68	67	66	66	65	64	63	63	62	61	60	59	58	57	57	56	23
24	75	74	73	72	72	71	70	69	68	68	67	66	65	64	63	63	62	61	60	59	58	24
25	78	77	76	75	75	74	73	72	71	70	70	69	68	67	66	65	64	63	62	62	61	25
26	81	80	79	78	78	77	76	75	74	73	72	71	71	70	69	68	67	66	65	64	63	26
27	84	83	82	81	81	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	27
28	87	86	85	84	84	83	82	81	80	79	78	77	76	75	74	73	72	71	70	69	68	28
29	90	89	88	87	87	86	85	84	83	82	81	80	79	78	77	76	75	73	72	71	70	29
30	93	92	92	91	90	89	88	87	86	84	83	82	82	80	79	78	77	76	75	74	73	30
31	97	96	95	94	93	91	90	89	88	87	86	85	84	83	82	81	80	79	77	76	75	31
32	100	99	98	97	96	94	93	92	91	90	89	88	87	86	85	83	82	81	80	79	78	32
33	103	102	101	100	98	97	96	95	94	93	92	91	90	88	87	86	85	84	82	81	80	33
34	106	105	104	103	101	100	99	98	97	96	95	93	92	91	90	89	87	86	85	84	82	34
35	109	108	107	106	104	103	102	101	100	99	97	96	95	94	92	91	90	89	87	86	85	35
36	112	111	110	109	107	106	105	104	103	101	100	99	98	96	95	94	92	91	90	89	87	36
37	115	114	113	112	110	109	108	107	105	104	103	102	101	99	98	96	95	94	92	91	90	37
38	118	117	116	115	113	112	111	110	109	107	106	104	103	102	100	99	98	96	95	94	92	38
39	122	120	119	118	116	115	114	112	111	110	108	107	106	104	103	102	100	99	97	96	95	39
40	125	123	122	121	119	118	117	115	114	113	111	110	109	107	106	104	103	101	100	98	97	40
41	128	126	125	124	122	121	120	118	117	115	114	113	111	110	108	107	105	104	102	101	99	41
42	131	130	128	127	125	124	123	121	120	118	117	115	114	112	111	109	108	106	105	103	102	42
43	134	■	131	130	128	127	125	124	123	121	120	118	117	115	114	112	110	109	107	106	104	■
44	137	136	134	133	131	130	128	127	125	124	122	121	120	118	116	115	113	111	110	108	107	44
45	140	139	137	136	134	133	131	130	128	127	125	124	122	120	119	117	116	114	112	111	109	45
46	143	142	140	139	137	136	134	133	131	130	128	126	125	123	121	120	118	117	115	113	112	46
47	146	145	143	142	140	139	137	136	134	132	131	129	128	126	124	122	121	119	117	116	114	47
48	150	148	146	145	143	142	140	138	137	135	133	132	131	128	127	125	123	122	120	118	116	48
49	153	151	149	148	146	145	143	141	140	138	136	135	133	131	129	128	126	124	122	121	119	49
50	156	154	152	151	149	148	146	144	142	141	139	137	136	134	132	130	128	127	125	123	121	50
51	159	157	156	154	152	150	149	147	145	144	142	140	139	136	135	133	131	129	127	126	124	51
52	162	160	159	157	155	153	152	150	148	146	145	143	141	139	137	135	134	132	130	129	126	52
53	165	163	162	160	158	156	155	153	151	149	147	146	144	142	140	138	136	134	132	130	128	53
54	168	167	165	163	161	159	158	156	154	152	150	148	147	144	143	141	139	137	135	133	131	54
55	171	170	169	166	164	162	160	159	157	155	153	151	150	147	145	143	141	139	137	135	133	55
56	174	173	171	169	167	165	163	162	160	158	156	154	152	150	148	146	144	142	140	138	136	56
57	178	176	174	172	170	168	166	164	162	160	158	157	155	153	151	148	146	144	142	140	138	57
58	181	179	177	175	173	171	169	167	165	163	161	159	158	155	153	151	149	147	145	143	141	58
59	184	182	180	178	176	174	172	170	168	166	164	162	160	158	156	154	152	150	147	145	143	59
60	187	185	183	181	179	177	175	173	171	169	167	165	163	161	158	156	154	152	150	148	145	60

(v.)

Nat. Versines.

	150°	151°	152°	153°	154°	155°	156°	157°	158°	159°	
0	1866025	1874620	1882948	1891007	1898794	1906308	1913546	1920505	1927184	1933580	0
1	1866171	1874761	1883084	1891139	1898922	1906431	1913664	1920619	1927293	1933685	1
2	66316	74902	83221	91271	99049	06554	13792	20732	27402	33790	2
3	66461	75043	83357	91402	99176	06676	13900	20846	27510	33893	3
4	1866607	1875183	1883493	1891534	1899304	1906790	1914018	1920959	1927619	1933997	4
5	66752	75324	83630	91666	99431	06922	14136	21072	27728	34101	5
6	66897	75465	83766	91798	99558	07044	14254	21185	27836	34205	6
7	1867042	1875605	1883902	1891929	1899685	1907167	1914372	1921209	1927945	1934308	7
8	67187	75746	84038	92061	99812	07289	14490	21412	28053	34412	8
9	67331	75886	84174	92192	99939	07411	14607	21525	28161	34515	9
10	1867476	1876026	1884310	1892323	1900065	1907533	1914725	1921638	1928270	1934619	10
11	67621	76167	84445	92456	00192	07655	14842	21750	28378	34782	11
12	67766	76307	84581	92586	00319	07778	14960	21868	28486	34886	12
13	1867910	1876447	1884717	1892717	1900445	1907900	1915077	1921976	1928594	1934929	13
14	68054	76587	84852	92848	00572	08021	15194	22000	28702	35032	14
15	68199	76727	84988	92979	00698	08143	15312	22111	28810	35131	15
16	1868343	1876867	1885123	1893110	1900625	1908265	1915429	1922313	1928917	1935238	16
17	68487	77006	85258	93241	00951	08387	15546	22426	29025	35341	17
18	68632	77146	85394	93371	01077	08508	15663	22538	29133	35444	18
19	1868776	1877286	1885529	1893502	1901203	1908630	1915780	1922650	1929240	1935547	19
20	68920	77425	85604	93603	01329	08751	15800	22762	29348	35650	20
21	69064	77565	85739	93763	01455	08873	16013	22875	29455	35753	21
22	1869207	1877704	1885934	1893894	1901581	1908994	1916130	1922987	1929562	1935835	22
23	69351	77844	86009	94024	01707	09115	16246	23098	29669	35957	23
24	69495	77983	86204	94154	01833	09236	16363	23210	29777	36060	24
25	1869639	1878122	1886338	1894284	1901950	1909357	1916479	1923322	1929884	1936162	25
26	69782	78261	86473	94415	02084	09478	16596	23434	29991	36284	26
27	69926	78400	86608	94545	02209	09599	16712	23545	30097	36386	27
28	1870069	1878538	1886742	1894675	1902335	1909720	1916828	1923657	1930204	1936468	28
29	70212	78678	86878	94805	02460	09841	16944	23768	30311	36570	29
30	70356	78817	87011	94934	02585	09961	17060	23880	30418	36672	30
31	1870409	1878956	1887145	1895004	1902711	1910082	1917176	1923991	1930524	1936774	31
32	70642	79095	87279	95194	02836	10202	17292	24102	30631	36876	32
33	70785	79233	87413	95323	02961	10323	17408	24213	30737	36977	33
34	1870928	1879372	1887548	1895453	1903086	1910443	1917523	1924324	1930843	1937079	34
35	71071	79510	87682	95682	03211	10563	17639	24435	30950	37181	35
36	71214	79649	87815	95712	03335	10684	17755	24546	31056	37282	36
37	1871357	1879787	1887949	1895841	1903460	1910804	1917870	1924657	1931162	1937383	37
38	71499	79825	88083	95970	03585	10924	17986	24768	31268	37485	38
39	71642	80063	88217	96099	03709	11044	18101	24878	31374	37586	39
40	1871784	1880201	1888350	1896229	1903834	1911164	1918216	1924989	1931480	1937687	40
41	71927	80339	88484	96358	03958	11284	18331	25099	31586	37788	41
42	72069	80477	88617	96486	04083	11403	18446	25210	31691	37889	42
43	1872212	1880615	1888751	1896615	1904207	1911523	1918561	1925320	1931797	1937990	43
44	72354	80753	88884	96744	04331	11643	18676	25430	31902	38091	44
45	72496	80891	89017	96873	04455	11762	18791	25541	32008	38191	45
46	1872638	1881028	1889150	1897001	1904579	1911882	1918906	1925651	1932113	1938292	46
47	72780	81166	89283	97130	04703	12001	19021	25761	32219	38292	47
48	72922	81304	89416	97256	04827	12120	19135	25871	32324	38393	48
49	1873064	1881441	1889549	1897387	1904951	1912230	1919250	1925981	1932429	1938593	49
50	73206	81578	89682	97515	05075	12358	19364	26090	32534	38694	50
51	73347	81716	89815	97643	05198	12478	19479	26200	32639	38794	51
52	1873489	1881853	1889948	1897771	1905322	1912597	1919593	1926310	1932744	1938894	52
53	73631	81900	90080	97900	05445	12715	19707	26419	32849	38994	53
54	73772	82127	90213	98028	05569	12834	19822	26529	32954	39094	54
55	1873914	1882264	1890345	1898156	1905692	1912953	1919936	1926638	1933058	1939194	55
56	74055	82401	90478	98263	05815	13072	20050	26747	33163	39294	56
57	74196	82538	90610	98411	05939	13190	20164	26857	33267	39394	57
58	1874338	1882674	1890742	1898539	1906062	1913309	1920277	1926966	1933372	1939400	58
59	74479	82811	90874	98667	06185	13427	20391	27075	33476	39493	59
60	74620	82948	91007	98794	06304	13546	20506	27184	33580	39603	60

Parts for Seconds.

(v.)

	150°		151°		152°		153°		154°		155°		156°		157°		158°		159°		160°		
"	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	"
1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	
2	5	5	5	5	5	5	4	4	4	4	4	4	4	4	4	4	4	4	3	3	3	2	
3	7	7	7	7	7	7	7	6	6	6	6	6	6	6	6	6	6	6	5	5	5	3	
4	10	10	9	9	9	9	9	9	8	8	8	8	8	8	8	7	7	7	7	7	7	4	
5	12	12	12	12	11	11	11	11	11	10	10	10	10	10	9	9	9	9	9	9	8	5	
6	15	14	14	14	14	13	13	13	13	13	12	12	12	12	11	11	11	11	10	10	10	6	
7	17	17	16	16	16	16	15	15	15	15	14	14	14	14	13	13	13	12	12	12	12	7	
8	19	19	19	19	18	18	18	17	17	17	16	16	16	16	15	15	15	14	14	14	13	8	
9	22	21	21	21	20	20	20	19	19	19	18	18	18	17	17	17	16	16	16	15	15	9	
10	24	24	24	23	23	22	22	22	21	21	20	20	20	19	19	19	18	18	17	17	17	10	
11	27	26	26	25	25	25	24	24	24	23	23	22	22	21	21	20	20	20	19	19	18	11	
12	29	29	28	28	27	27	26	26	25	25	24	24	23	23	22	22	21	21	20	20	20	12	
13	32	31	31	30	30	29	29	28	28	27	27	26	26	25	24	24	23	23	22	22	22	13	
14	34	33	33	32	32	31	31	30	30	29	29	28	28	27	27	26	25	25	24	24	23	14	
15	36	36	35	35	34	34	33	32	32	31	31	30	30	29	28	28	27	27	26	25	25	15	
16	39	38	38	37	36	36	35	35	34	33	33	32	32	31	30	30	29	28	27	27	27	16	
17	41	41	40	39	39	38	37	37	36	35	35	34	34	33	32	32	31	30	30	29	28	17	
18	44	43	43	42	41	40	40	39	38	38	37	36	35	35	34	33	33	32	31	31	30	18	
19	46	45	45	44	43	42	41	40	40	39	38	37	37	36	35	35	34	33	32	32	32	19	
20	48	48	47	46	46	45	44	43	42	42	41	40	39	39	38	37	36	36	35	34	33	20	
21	51	50	49	49	48	47	46	45	45	44	43	42	41	41	40	39	38	37	36	36	35	21	
22	53	53	52	51	50	49	48	48	47	46	45	44	43	43	42	41	40	39	38	37	36	22	
23	56	55	54	53	52	51	50	49	48	47	46	45	44	44	43	42	41	40	39	38	37	23	
24	58	57	56	56	55	54	53	52	51	50	49	48	47	46	45	45	44	43	42	41	40	24	
25	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41	25	
26	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43	26	
27	65	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45	27	
28	68	67	66	65	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48	28	
29	70	69	68	67	66	65	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	29	
30	73	72	71	69	68	67	66	65	64	63	62	61	60	59	58	57	56	55	54	53	52	30	
31	75	74	73	72	71	69	68	67	66	65	64	63	62	61	60	59	58	57	56	55	54	31	
32	78	76	75	74	73	72	70	69	68	67	66	65	64	63	62	61	60	59	58	57	56	32	
33	80	79	78	76	75	74	73	71	70	69	68	67	66	65	64	63	62	61	60	59	58	33	
34	82	81	80	79	77	76	75	74	72	71	70	69	68	67	66	65	64	63	62	61	60	34	
35	85	84	82	81	80	78	77	76	74	73	72	70	69	68	67	66	65	64	63	62	61	35	
36	87	86	85	83	82	81	79	78	76	75	74	72	71	70	69	68	67	66	65	64	63	36	
37	90	88	87	86	84	83	81	80	79	77	76	74	73	72	70	69	67	66	65	64	63	37	
38	92	91	89	88	86	85	84	82	81	79	78	76	75	73	72	70	69	68	66	65	63	38	
39	95	93	92	90	89	87	86	84	83	81	80	78	77	75	74	72	71	69	68	66	65	39	
40	97	95	94	93	91	90	88	87	85	83	82	80	79	77	76	74	73	71	70	68	66	40	
41	99	98	96	95	93	92	90	89	87	86	84	82	81	79	78	76	74	73	71	70	68	41	
42	102	100	99	97	96	94	92	91	89	88	86	84	83	81	80	78	76	75	73	71	70	42	
43	104	103	101	99	98	96	95	93	91	90	88	86	85	83	81	80	78	76	74	73	71	43	
44	107	105	103	102	100	98	97	95	93	92	90	89	87	85	83	82	80	78	76	75	73	44	
45	109	107	106	104	102	101	99	97	96	94	92	90	89	87	85	83	82	80	78	76	75	45	
46	112	110	108	106	105	103	101	100	98	96	94	92	91	89	87	85	84	82	80	78	76	46	
47	114	112	110	109	107	105	103	102	100	98	96	95	93	91	89	87	85	84	82	80	78	47	
48	116	115	113	111	109	107	106	104	102	100	98	97	95	93	91	89	87	85	83	81	80	48	
49	119	117	115	113	112	110	108	106	104	102	100	99	97	95	93	91	89	87	85	83	81	49	
50	121	119	118	116	114	112	110	108	106	104	102	101	99	97	95	93	91	89	87	85	83	50	
51	124	122	120	118	116	114	112	110	108	106	105	103	101	99	97	95	93	91	89	87	85	51	
52	126	124	122	120	118	116	114	112	110	109	107	105	103	101	98	96	94	92	90	88	86	52	
53	129	127	125	123	121	119	117	115	113	111	109	107	105	102	100	98	96	94	92	90	88	53	
54	131	129	127	125	123	121	119	117	115	113	111	109	106	104	102	100	98	96	94	92	90	54	
55	133	131	129	127	125	123	121	119	117	115	113	111	108	106	104	102	100	98	96	93	91	55	
56	136	134	132	130	127	125	123	121	119	117	115	113	110	108	106	104	102	100	97	95	93	56	
57	138	136	134	132	130	128	125	123	121	119	117	115	112	110	108	106	104	101	99	97	95	57	
58	141	138	136	134	132	130	128	125	123	121	119	117	114	112	110	108	105	103	101	98	96	58	
59	143	141	139	137	134	131	130	128	125	123	121	119	116	114	112	109	107	105	103	100	98	59	
60	145	143	141	139	136	134	132	130	127	125	123	121	118	116	114	111	109	107	104	102	99	60	

(v.)

Nat. Versines.

	160°	161°	162°	163°	164°	165°	166°	167°	168°	16
●	1939693	1945519	1951057	1956305	1961262	1965926	1970296	1974370	1978148	1981
1	1939792	1945613	1951146	1956390	1961342	1966001	1970366	1974436	1978208	1981
2	39891	45708	51236	56475	61422	66076	70436	74501	78268	81
3	39991	45802	51328	56560	61502	66151	70507	74566	78329	81
4	1940090	1945897	1951415	1956644	1961582	1966226	1970577	1974631	1978389	1981
5	40189	45991	51505	56729	61662	66301	70647	74696	78449	81
6	40288	46085	51594	56814	61741	66376	70717	74761	78509	81
7	1940387	1946180	1951684	1956898	1961821	1966451	1970786	1974826	1978569	1982
8	40486	46274	51773	56983	61901	66526	70856	74891	78629	82
9	40585	46368	51862	57067	61980	66600	70926	74956	78689	82
10	1940684	1946462	1951951	1957151	1962059	1966675	1970995	1975020	1978748	1982
11	40782	46556	52040	57235	62139	66749	71065	75085	78808	82
12	40881	46649	52129	57320	62218	66823	71134	75149	78867	82
13	1940979	1946743	1952218	1957404	1962297	1966898	1971204	1975214	1978927	1982
14	41078	46837	52307	57488	62376	66972	71273	75278	78986	82
15	41176	46930	52396	57571	62455	67046	71342	75342	79046	82
16	1941274	1947024	1952484	1957655	1962534	1967120	1971411	1975407	1979105	1982
17	41372	47117	52573	57739	62613	67194	71480	75471	79164	82
18	41471	47210	52662	57823	62692	67268	71549	75535	79223	82
19	1941569	1947304	1952750	1957906	1962770	1967342	1971618	1975599	1979282	1982
20	41667	47397	52838	57990	62849	67415	71687	75662	79341	82
21	41764	47490	52926	58073	62928	67489	71755	75726	79399	82
22	1941862	1947583	1953015	1958156	1963006	1967562	1971824	1975790	1979458	1982
23	41960	47676	53103	58239	63084	67636	71893	75853	79517	82
24	42058	47768	53191	58323	63163	67709	71961	75917	79575	82
25	1942155	1947861	1953279	1958406	1963241	1967783	1972029	1975980	1979634	1982
26	42253	47954	53366	58489	63319	67856	72098	76044	79692	82
27	42350	48046	53454	58572	63397	67929	72166	76107	79750	82
28	1942447	1948139	1953542	1958654	1963475	1968002	1972234	1976170	1979809	1983
29	42544	48231	53629	58737	63553	68075	72302	76233	79867	83
30	42642	48324	53717	58820	63631	68148	72370	76296	79925	83
31	1942739	1948416	1953804	1958902	1963708	1968220	1972438	1976359	1979983	1983
32	42836	48508	53892	58985	63786	68293	72506	76422	80041	83
33	42932	48600	53979	59067	63863	68366	72573	76485	80098	83
34	1943029	1948692	1954066	1959150	1963941	1968438	1972641	1976547	1980156	1983
35	43126	48784	54153	59232	64018	68511	72708	76610	80214	83
36	43223	48876	54240	59314	64095	68583	72776	76672	80271	83
37	1943319	1948968	1954327	1959396	1964173	1968656	1972843	1976735	1980329	1983
38	43416	49060	54414	59478	64250	68728	72911	76797	80386	83
39	43512	49151	54501	59560	64327	68800	72978	76859	80443	83
40	1943609	1949243	1954588	1959642	1964404	1968872	1973045	1976922	1980501	1983
41	43705	49334	54674	59724	64481	68944	73112	76984	80558	83
42	43801	49426	54761	59805	64557	69016	73179	77046	80615	83
43	1943897	1949517	1954847	1959887	1964634	1969088	1973246	1977108	1980672	1983
44	43993	49608	54934	59968	64711	69159	73313	77169	80729	83
45	44089	49699	55020	60050	64787	69231	73379	77231	80785	84
46	1944185	1949790	1955106	1960131	1964864	1969302	1973446	1977293	1980842	1984
47	44281	49881	55192	60213	64940	69374	73512	77354	80899	84
48	44376	49972	55278	60294	65016	69445	73579	77416	80955	84
49	1944472	1950063	1955364	1960375	1965093	1969517	1973645	1977477	1981012	1984
50	44568	50154	55450	60456	65169	69588	73712	77539	81068	84
51	44663	50244	55536	60537	65245	69659	73778	77600	81124	84
52	1944758	1950335	1955622	1960618	1965321	1969730	1973844	1977661	1981181	1984
53	44854	50425	55707	60698	65397	69801	73910	77722	81237	84
54	44949	50516	55793	60779	65473	69872	73976	77783	81293	84
55	1945044	1950606	1955879	1960860	1965548	1969943	1974042	1977844	1981349	1984
56	45139	50696	55964	60940	65624	70014	74108	77905	81405	84
57	45234	50787	56049	61021	65700	70084	74173	77966	81460	84
58	1945329	1950877	1956135	1961101	1965775	1970155	1974239	1978026	1981516	1984
59	45424	50967	56220	61182	65850	70225	74305	78087	81572	84
60	45519	51057	56305	61262	65926	70296	74370	78148	81627	84

Parts for Seconds.

(v.)

160°	161°	162°	163°	164°	165°	166°	167°	168°	169°	170°	
0' 30"	0' 30"	0' 30"	0' 30"	0' 30"	0' 30"	0' 30"	0' 30"	0' 30"	0' 30"	0' 30"	
2	2	1	1	1	1	1	1	1	1	1	1
3	3	3	3	3	3	2	2	2	2	2	2
6	5	5	4	4	4	4	3	3	3	3	3
7	6	6	6	6	5	5	5	4	4	4	4
8	8	8	7	7	7	6	6	5	5	5	5
10	10	9	9	9	8	8	7	6	6	6	6
12	11	11	10	10	9	9	8	7	7	7	7
13	13	12	12	11	11	10	10	9	8	8	8
15	15	14	13	13	12	11	11	10	9	9	9
17	16	15	15	14	14	13	12	11	10	10	10
18	17	16	16	15	15	14	13	12	11	10	11
19	19	18	17	17	16	15	14	13	12	11	12
21	21	20	19	18	17	16	15	14	13	12	13
22	22	21	20	19	18	17	16	15	14	13	14
23	23	22	21	20	19	18	17	16	15	14	15
24	24	23	22	21	20	19	18	17	16	15	16
26	25	24	23	22	21	20	19	18	17	16	17
27	26	25	24	23	22	21	20	19	18	17	18
28	27	26	25	24	23	22	21	20	19	18	19
29	28	27	26	25	24	23	22	21	20	19	20
30	29	28	27	26	25	24	23	22	21	20	21
31	30	29	28	27	26	25	24	23	22	21	22
32	31	30	29	28	27	26	25	24	23	22	23
33	32	31	30	29	28	27	26	25	24	23	24
34	33	32	31	30	29	28	27	26	25	24	25
35	34	33	32	31	30	29	28	27	26	25	26
36	35	34	33	32	31	30	29	28	27	26	27
37	36	35	34	33	32	31	30	29	28	27	28
38	37	36	35	34	33	32	31	30	29	28	29
39	38	37	36	35	34	33	32	31	30	29	30
40	39	38	37	36	35	34	33	32	31	30	31
41	40	39	38	37	36	35	34	33	32	31	32
42	41	40	39	38	37	36	35	34	33	32	33
43	42	41	40	39	38	37	36	35	34	33	34
44	43	42	41	40	39	38	37	36	35	34	35
45	44	43	42	41	40	39	38	37	36	35	36
46	45	44	43	42	41	40	39	38	37	36	37
47	46	45	44	43	42	41	40	39	38	37	38
48	47	46	45	44	43	42	41	40	39	38	39
49	48	47	46	45	44	43	42	41	40	39	40
50	49	48	47	46	45	44	43	42	41	40	41
51	50	49	48	47	46	45	44	43	42	41	42
52	51	50	49	48	47	46	45	44	43	42	43
53	52	51	50	49	48	47	46	45	44	43	44
54	53	52	51	50	49	48	47	46	45	44	45
55	54	53	52	51	50	49	48	47	46	45	46
56	55	54	53	52	51	50	49	48	47	46	47
57	56	55	54	53	52	51	50	49	48	47	48
58	57	56	55	54	53	52	51	50	49	48	49
59	58	57	56	55	54	53	52	51	50	49	50
60	59	58	57	56	55	54	53	52	51	50	51
61	60	59	58	57	56	55	54	53	52	51	52
62	61	60	59	58	57	56	55	54	53	52	53
63	62	61	60	59	58	57	56	55	54	53	54
64	63	62	61	60	59	58	57	56	55	54	55
65	64	63	62	61	60	59	58	57	56	55	56
66	65	64	63	62	61	60	59	58	57	56	57
67	66	65	64	63	62	61	60	59	58	57	58
68	67	66	65	64	63	62	61	60	59	58	59
69	68	67	66	65	64	63	62	61	60	59	60
70	69	68	67	66	65	64	63	62	61	60	61
71	70	69	68	67	66	65	64	63	62	61	62
72	71	70	69	68	67	66	65	64	63	62	63
73	72	71	70	69	68	67	66	65	64	63	64
74	73	72	71	70	69	68	67	66	65	64	65
75	74	73	72	71	70	69	68	67	66	65	66
76	75	74	73	72	71	70	69	68	67	66	67
77	76	75	74	73	72	71	70	69	68	67	68
78	77	76	75	74	73	72	71	70	69	68	69
79	78	77	76	75	74	73	72	71	70	69	70
80	79	78	77	76	75	74	73	72	71	70	71
81	80	79	78	77	76	75	74	73	72	71	72
82	81	80	79	78	77	76	75	74	73	72	73
83	82	81	80	79	78	77	76	75	74	73	74
84	83	82	81	80	79	78	77	76	75	74	75
85	84	83	82	81	80	79	78	77	76	75	76
86	85	84	83	82	81	80	79	78	77	76	77
87	86	85	84	83	82	81	80	79	78	77	78
88	87	86	85	84	83	82	81	80	79	78	79
89	88	87	86	85	84	83	82	81	80	79	80
90	89	88	87	86	85	84	83	82	81	80	81
91	90	89	88	87	86	85	84	83	82	81	82
92	91	90	89	88	87	86	85	84	83	82	83
93	92	91	90	89	88	87	86	85	84	83	84
94	93	92	91	90	89	88	87	86	85	84	85
95	94	93	92	91	90	89	88	87	86	85	86
96	95	94	93	92	91	90	89	88	87	86	87
97	96	95	94	93	92	91	90	89	88	87	88

(v.)

Nat. Versines.

	170°	171°	172°	173°	174°	175°	176°	177°	178°	179°	
0	1984108	1987688	1990268	1992846	1995422	1998018	1997564	1998630	1999391	1999848	0
1	1984158	1987734	1990309	1992882	1995452	1998020	1997584	1998645	1999401	1999853	1
2	84909	87779	90349	92917	94583	96245	97605	98660	99411	99858	2
3	84959	87825	90289	92662	94613	96270	97625	98675	99421	99863	3
4	1985009	1987870	1990429	1992687	1994643	1996295	1997645	1998690	1999431	1999867	4
5	85059	87915	90469	92722	94673	96320	97665	98705	99441	99872	5
6	85109	87960	90510	92767	94703	96346	97684	98719	99450	99877	6
7	1985159	1988005	1990649	1992792	1994733	1996370	1997704	1998734	1999460	1999881	7
8	85209	88060	90589	92827	94763	96395	97724	98749	99469	99886	8
9	85259	88065	90629	92862	94792	96420	97743	98763	99479	99890	9
10	1985309	1988130	1990669	1992896	1994822	1996444	1997763	1998778	1999488	1999894	10
11	85358	88184	90708	92931	94851	96469	97782	98792	99497	99898	11
12	85408	88228	90748	92966	94881	96493	97802	98806	99507	99903	12
13	1985457	1988273	1990787	1993006	1994910	1996517	1997821	1998820	1999516	1999907	13
14	85507	88317	90827	93034	94939	96541	97840	98834	99525	99911	14
15	85556	88362	90866	93069	94969	96566	97859	98848	99534	99914	15
16	1985605	1988406	1990906	1993103	1994998	1996590	1997878	1998862	1999542	1999918	16
17	85654	88450	90944	93137	95027	96614	97897	98876	99561	99922	17
18	85704	88494	90983	93171	95056	96637	97916	98890	99560	99925	18
19	1985752	1988538	1991022	1993205	1995084	1996661	1997934	1998904	1999568	1999929	19
20	85801	88582	91061	93236	95113	96685	97953	98917	99577	99932	20
21	85850	88626	91100	93272	95142	96709	97972	98931	99583	99936	21
22	1985899	1988699	1991138	1993306	1995171	1996732	1997990	1998944	1999594	1999939	22
23	85948	88713	91177	93339	95199	96756	98008	98957	99602	99942	23
24	85996	88756	91216	93373	95227	96779	98027	98971	99610	99945	24
25	1986045	1988800	1991254	1993406	1995236	1996802	1998045	1998984	1999618	1999948	25
26	86093	88843	91292	93440	95284	96825	98063	98997	99626	99951	26
27	86141	88887	91331	93473	95312	96849	98081	98990	99634	99954	27
28	1986189	1988930	1991369	1993506	1995340	1996872	1998009	1999023	1999642	1999957	28
29	86238	88973	91407	93539	95368	96895	98117	99036	99650	99959	29
30	86286	89016	91445	93572	95396	96917	98135	99048	99657	99962	30
31	1986334	1989059	1991483	1993605	1995424	1996940	1998153	1999061	1999665	1999964	31
32	86382	89102	91521	93638	95452	96963	98170	99073	99672	99967	32
33	86429	89145	91558	93670	95480	96985	98188	99086	99680	99969	33
34	1986477	1989187	1991696	1993763	1995580	1997008	1998205	1999098	1999687	1999971	34
35	86525	89230	91634	93736	95535	97030	98223	99111	99694	99974	35
36	86572	89272	91671	93768	95562	97053	98240	99123	99702	99976	36
37	1986620	1989315	1991700	1993800	1995580	1997075	1998257	1999135	1999709	1999978	37
38	86667	89357	91746	93833	95617	97097	98274	99147	99716	99980	38
39	86714	89399	91783	93865	95644	97119	98291	99159	99722	99981	39
40	1986762	1989442	1991820	1993867	1995671	1997141	1998308	1999171	1999729	1999983	40
41	86809	89484	91857	93929	95698	97163	98326	99183	99736	99985	41
42	86856	89526	91894	93961	95725	97185	98342	99194	99743	99986	42
43	1986903	1989568	1991931	1993993	1995732	1997207	1998359	1999206	1999749	1999988	43
44	86950	89610	91968	94025	95778	97229	98375	99218	99756	99989	44
45	86996	89651	92005	94056	95805	97250	98392	99229	99762	99991	45
46	1987043	1989693	1992042	1994088	1995832	1997272	1998408	1999240	1999768	1999992	46
47	87090	89735	92078	94120	95858	97293	98425	99252	99775	99993	47
48	87136	89776	92115	94161	95884	97315	98441	99263	99781	99994	48
49	1987183	1989818	1992151	1994182	1995911	1997336	1998467	1999274	1999787	1999995	49
50	87229	89809	92187	94214	95937	97357	98473	99285	99793	99996	50
51	87275	89900	92224	94245	95963	97378	98489	99296	99799	99997	51
52	1987322	1989942	1992260	1994276	1995989	1997399	1998505	1999307	1999804	1999997	52
53	87368	89983	92296	94307	96015	97420	98521	99318	99810	99996	53
54	87414	90024	92332	94338	96041	97441	98537	99328	99816	99999	54
55	1987460	1990065	1992368	1994369	1996067	1997462	1998552	1999335	1999821	1999999	55
56	87506	90106	92404	94400	96093	97482	98568	99350	99837	99999	56
57	87551	90146	92439	94430	96118	97503	98584	99360	99832	2000000	57
58	1987597	1990187	1992475	1994461	1996144	1997523	1998599	1999370	1999837	2000000	58
59	87643	90228	92511	94491	96169	97544	98614	99381	99843	00000	59
60	87688	90268	92546	94522	96195	97564	98630	99391	99848	00000	60

Parts for Seconds.

(v.)

	170°		171°		172°		173°		174°		175°		176°		177°		178°		179°		180°		
"	0'	30"	0'	30"	0'	30"	0'	30"	0'	30"	0'	30"	0'	30"	0'	30"	0'	30"	0'	30"	0'	30"	"
1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	2	
3	3	2	2	2	2	2	2	2	1	1	1	1	1	1	1	0	0	0	0	0	0	3	
4	3	3	3	3	3	2	2	2	2	2	2	1	1	1	1	1	1	0	0	0	0	4	
5	4	4	4	4	4	3	3	3	3	3	2	2	2	2	1	1	1	1	0	0	0	5	
6	5	5	4	4	4	4	3	3	3	3	2	2	2	2	1	1	1	1	0	0	0	6	
7	6	6	5	5	5	4	4	4	3	3	3	3	2	2	2	1	1	1	1	0	0	7	
8	7	6	6	6	6	5	5	4	4	4	3	3	3	2	2	2	1	1	1	0	0	8	
9	8	7	7	6	6	6	5	4	4	4	3	3	3	3	2	2	1	1	1	0	0	9	
10	8	8	8	7	7	6	6	5	5	5	4	4	3	3	2	2	2	1	1	0	0	10	
11	9	9	8	8	7	7	6	6	6	5	5	4	4	3	3	2	2	2	1	0	0	11	
12	10	10	9	9	8	8	7	7	6	6	5	5	4	3	3	2	2	1	1	0	0	12	
13	11	10	10	9	9	8	8	7	7	6	5	5	4	4	3	3	2	2	1	0	0	13	
14	12	11	11	10	9	9	8	8	7	7	6	5	5	4	3	3	2	2	1	0	0	14	
15	13	12	11	11	10	9	9	8	8	7	6	6	5	4	4	3	2	2	1	0	0	15	
16	13	13	12	11	11	10	9	9	8	7	7	6	5	5	4	3	3	2	2	1	0	16	
17	14	14	13	12	11	11	10	9	9	8	7	6	6	5	4	4	3	2	1	1	0	17	
18	15	14	14	13	12	11	11	10	9	8	8	7	6	5	5	4	3	2	1	1	0	18	
19	16	15	14	14	13	12	11	10	10	9	8	7	6	6	5	4	3	2	2	1	0	19	
20	17	16	15	14	13	13	12	11	10	9	8	7	6	6	5	4	3	2	2	1	0	20	
21	18	17	16	15	14	13	12	11	11	10	9	8	7	6	6	5	4	3	2	1	0	21	
22	19	18	17	16	15	14	13	12	11	10	9	8	7	6	6	5	4	3	2	1	0	22	
23	19	18	17	16	15	14	13	12	11	10	9	8	7	6	6	5	4	3	2	1	0	23	
24	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	24	
25	21	20	19	18	17	16	15	14	13	12	11	9	8	7	6	5	4	3	2	1	0	25	
26	22	21	20	19	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	26
27	23	22	20	19	18	17	16	15	14	12	11	10	9	8	7	6	5	3	2	1	0	27	
28	24	22	21	20	19	18	16	15	14	13	12	11	9	8	7	6	5	3	2	1	0	28	
29	24	23	22	21	19	18	17	16	15	13	12	11	10	9	7	6	5	4	2	1	0	29	
30	25	24	23	21	20	19	18	16	15	14	13	11	10	9	8	6	5	4	2	1	0	30	
31	26	25	23	22	21	20	18	17	16	14	13	12	10	9	8	7	5	4	3	1	0	31	
32	27	26	24	23	22	20	19	17	16	15	13	12	11	9	8	7	5	4	3	1	0	32	
33	28	26	25	24	22	21	19	18	17	15	14	12	11	10	8	7	6	4	3	1	0	33	
34	29	27	26	24	23	21	20	19	17	16	14	13	11	10	9	7	6	4	3	1	0	34	
35	29	28	26	25	21	22	21	19	18	16	15	13	12	10	9	7	6	4	3	1	0	35	
36	30	29	27	26	24	23	21	20	18	17	15	14	12	11	9	8	6	5	3	1	0	36	
37	31	30	28	26	25	23	22	20	19	17	16	14	12	11	9	8	6	5	3	1	0	37	
38	32	30	29	27	26	24	22	21	19	18	16	14	13	11	10	8	6	5	3	2	0	38	
39	33	31	30	28	26	25	23	21	20	18	16	15	13	11	10	8	7	5	3	2	0	39	
40	34	32	30	29	27	25	24	22	20	18	17	15	13	12	10	8	7	5	3	2	0	40	
41	35	33	31	29	28	26	24	22	21	19	17	16	14	12	10	9	7	5	3	2	0	41	
42	35	34	32	30	28	27	25	23	21	19	18	16	14	12	11	9	7	5	3	2	0	42	
43	36	34	33	31	29	27	26	24	22	20	18	16	14	13	11	9	7	6	4	2	0	43	
44	37	35	33	31	30	28	26	24	22	20	19	17	15	13	11	9	7	6	4	2	0	44	
45	38	36	34	32	30	28	27	25	23	21	19	17	15	13	11	9	8	6	4	2	0	45	
46	39	37	35	33	31	29	27	25	23	21	19	17	16	14	12	10	8	6	4	2	0	46	
47	40	38	36	34	32	30	28	26	24	22	20	18	16	14	12	10	8	6	4	2	0	47	
48	40	38	36	34	32	30	28	26	24	22	20	18	16	14	12	10	8	6	4	2	0	48	
49	41	39	37	35	33	31	29	27	25	23	21	19	16	14	12	10	8	6	4	2	0	49	
50	42	40	38	36	34	32	29	27	25	23	21	19	17	15	13	10	8	6	4	2	0	50	
51	43	41	39	36	34	32	30	28	26	24	21	19	17	15	13	11	9	6	4	2	0	51	
52	44	42	39	37	35	33	31	28	26	24	22	20	18	15	13	11	9	7	4	2	0	52	
53	45	42	40	38	36	33	31	29	27	25	22	20	18	16	13	11	9	7	4	2	0	53	
54	45	43	41	39	36	34	32	30	27	25	23	20	18	16	14	11	9	7	4	2	0	54	
55	46	44	42	39	37	35	32	30	28	25	23	21	19	16	14	12	9	7	5	2	0	55	
56	47	45	42	40	38	35	33	31	28	26	24	21	19	17	14	12	9	7	5	2	0	56	
57	48	46	44	41	39	36	34	31	29	26	24	22	19	17	14	12	10	7	5	2	0	57	
58	49	46	44	42	39	37	34	32	29	27	24	22	20	17	15	12	10	7	5	2	0	58	
59	50	47	45	43	40	37	35	32	30	27	25	22	20	17	15	12	10	7	5	2	0	59	
60	50	48	45	43	40	38	35	33	30	28	25	23	20	18	15	13	10	8	5	2	0	60	

(w.)		The Correction of the Moon's Altitude, and the Aux. Angle A. (4' and 5')																Revol. of 11	
		Minutes of Moon's Hor. Parallax.																	
App. Alt.		54'		55'		56'		57'		58'		59'		60'		61'			
d	+	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A		
		+	60°	+	60°	+	60°	+	60°	+	60°	+	60°	+	60°	+	60°		
0	42 1	117 43 1	120 44 1	123 45 0	126 46 0	129 47 0	132 48 0	135 49 0	138 49 0	141 49 0	144 49 0	147 49 0	150 49 0	153 49 0	156 49 0	159 49 0	162 49 0	165 49 0	168 49 0
2	42 5	118 43 5	121 44 5	124 45 4	127 46 4	130 47 4	133 48 4	136 49 4	139 49 4	142 49 4	145 49 4	148 49 4	151 49 4	154 49 4	157 49 4	160 49 4	163 49 4	166 49 4	169 49 4
4	42 9	119 43 9	122 44 9	125 45 9	128 46 8	131 47 8	134 48 8	137 49 8	140 49 8	143 49 8	146 49 8	149 49 8	152 49 8	155 49 8	158 49 8	161 49 8	164 49 8	167 49 8	170 49 8
6	42 13	120 43 13	123 44 13	126 45 13	129 46 12	132 47 12	135 48 12	138 49 12	141 49 12	144 49 12	147 49 12	150 49 12	153 49 12	156 49 12	159 49 12	162 49 12	165 49 12	168 49 12	171 49 12
8	42 17	121 43 17	124 44 17	127 45 17	130 46 17	133 47 16	136 48 16	139 49 16	142 49 16	145 49 16	148 49 16	151 49 16	154 49 16	157 49 16	160 49 16	163 49 16	166 49 16	169 49 16	172 49 16
10	42 21	122 43 21	125 44 21	128 45 21	131 46 21	134 47 20	137 48 20	140 49 20	143 49 20	146 49 20	149 49 20	152 49 20	155 49 20	158 49 20	161 49 20	164 49 20	167 49 20	170 49 20	173 49 20
12	42 25	123 43 25	127 44 25	129 45 25	132 46 25	135 47 24	138 48 24	141 49 24	144 49 24	147 49 24	150 49 24	153 49 24	156 49 24	159 49 24	162 49 24	165 49 24	168 49 24	171 49 24	174 49 24
14	42 29	125 43 29	128 44 29	131 45 29	134 46 29	137 47 29	140 48 29	143 49 29	146 49 29	149 49 29	152 49 29	155 49 29	158 49 29	161 49 29	164 49 29	167 49 29	170 49 29	173 49 29	176 49 29
16	42 33	126 43 33	129 44 33	132 45 33	135 46 33	138 47 33	141 48 33	144 49 33	147 49 33	150 49 33	153 49 33	156 49 33	159 49 33	162 49 33	165 49 33	168 49 33	171 49 33	174 49 33	177 49 33
18	42 37	127 43 37	130 44 37	133 45 37	136 46 37	139 47 37	142 48 37	145 49 37	148 49 37	151 49 37	154 49 37	157 49 37	160 49 37	163 49 37	166 49 37	169 49 37	172 49 37	175 49 37	178 49 37
20	42 41	128 43 41	131 44 41	134 45 41	137 46 41	140 47 41	143 48 41	146 49 41	149 49 41	152 49 41	155 49 41	158 49 41	161 49 41	164 49 41	167 49 41	170 49 41	173 49 41	176 49 41	179 49 41
22	42 45	129 43 45	132 44 45	135 45 45	138 46 45	141 47 44	144 48 44	147 49 44	150 49 44	153 49 44	156 49 44	159 49 44	162 49 44	165 49 44	168 49 44	171 49 44	174 49 44	177 49 44	180 49 44
24	42 49	130 43 49	133 44 49	136 45 49	139 46 49	142 47 48	145 48 48	148 49 48	151 49 48	154 49 48	157 49 48	160 49 48	163 49 48	166 49 48	169 49 48	172 49 48	175 49 48	178 49 48	181 49 48
26	42 53	131 43 53	134 44 53	137 45 53	140 46 53	143 47 52	146 48 52	149 49 52	152 49 52	155 49 52	158 49 52	161 49 52	164 49 52	167 49 52	170 49 52	173 49 52	176 49 52	179 49 52	182 49 52
28	42 56	132 43 56	135 44 56	138 45 56	141 46 56	144 47 55	147 48 55	150 49 55	153 49 55	156 49 55	159 49 55	162 49 55	165 49 55	168 49 55	171 49 55	174 49 55	177 49 55	180 49 55	183 49 55
30	43 0	133 44 0	136 45 0	139 46 0	142 47 0	145 48 0	148 49 0	151 49 0	154 49 0	157 49 0	160 49 0	163 49 0	166 49 0	169 49 0	172 49 0	175 49 0	178 49 0	181 49 0	184 49 0
32	43 3	134 44 3	137 45 3	140 46 3	143 47 3	146 48 3	149 49 3	152 49 3	155 49 3	158 49 3	161 49 3	164 49 3	167 49 3	170 49 3	173 49 3	176 49 3	179 49 3	182 49 3	185 49 3
34	43 7	135 44 7	138 45 7	141 46 7	144 47 7	147 48 6	150 49 6	153 49 6	156 49 6	159 49 6	162 49 6	165 49 6	168 49 6	171 49 6	174 49 6	177 49 6	180 49 6	183 49 6	186 49 6
36	43 11	136 44 11	139 45 11	142 46 11	145 47 11	148 48 10	151 49 10	154 49 10	157 49 10	160 49 10	163 49 10	166 49 10	169 49 10	172 49 10	175 49 10	178 49 10	181 49 10	184 49 10	187 49 10
38	43 14	137 44 14	140 45 14	143 46 14	146 47 14	149 48 13	152 49 13	155 49 13	158 49 13	161 49 13	164 49 13	167 49 13	170 49 13	173 49 13	176 49 13	179 49 13	182 49 13	185 49 13	188 49 13
40	43 18	138 44 18	141 45 18	144 46 18	147 47 18	150 48 17	153 49 17	156 49 17	159 49 17	162 49 17	165 49 17	168 49 17	171 49 17	174 49 17	177 49 17	180 49 17	183 49 17	186 49 17	189 49 17
42	43 21	139 44 21	142 45 21	145 46 21	148 47 21	151 48 20	154 49 20	157 49 20	160 49 20	163 49 20	166 49 20	169 49 20	172 49 20	175 49 20	178 49 20	181 49 20	184 49 20	187 49 20	190 49 20
44	43 24	141 44 24	144 45 24	147 46 24	150 47 24	153 48 24	156 49 24	159 49 24	162 49 24	165 49 24	168 49 24	171 49 24	174 49 24	177 49 24	180 49 24	183 49 24	186 49 24	189 49 24	192 49 24
46	43 28	142 44 28	145 45 28	148 46 28	151 47 28	154 48 27	157 49 27	160 49 27	163 49 27	166 49 27	169 49 27	172 49 27	175 49 27	178 49 27	181 49 27	184 49 27	187 49 27	190 49 27	193 49 27
48	43 31	143 44 31	146 45 31	149 46 31	152 47 31	155 48 30	158 49 30	161 49 30	164 49 30	167 49 30	170 49 30	173 49 30	176 49 30	179 49 30	182 49 30	185 49 30	188 49 30	191 49 30	194 49 30
50	43 34	144 44 34	147 45 34	150 46 34	153 47 34	156 48 33	159 49 33	162 49 33	165 49 33	168 49 33	171 49 33	174 49 33	177 49 33	180 49 33	183 49 33	186 49 33	189 49 33	192 49 33	195 49 33
52	43 37	145 44 37	148 45 37	151 46 37	154 47 37	157 48 36	160 49 36	163 49 36	166 49 36	169 49 36	172 49 36	175 49 36	178 49 36	181 49 36	184 49 36	187 49 36	190 49 36	193 49 36	196 49 36
54	43 41	146 44 40	149 45 40	152 46 40	155 47 40	158 48 40	161 49 40	164 49 40	167 49 40	170 49 40	173 49 40	176 49 40	179 49 40	182 49 40	185 49 40	188 49 40	191 49 40	194 49 40	197 49 40
56	43 44	147 44 44	150 45 44	153 46 44	156 47 44	159 48 43	162 49 43	165 49 43	168 49 43	171 49 43	174 49 43	177 49 43	180 49 43	183 49 43	186 49 43	189 49 43	192 49 43	195 49 43	198 49 43
58	43 47	148 44 47	151 45 47	154 46 47	157 47 47	160 48 46	163 49 46	166 49 46	169 49 46	172 49 46	175 49 46	178 49 46	181 49 46	184 49 46	187 49 46	190 49 46	193 49 46	196 49 46	199 49 46
5°	54'	55'	56'	57'	58'	59'	60'	61'	62'	63'	64'	65'	66'	67'	68'	69'	70'	71'	72'
0	43 50	149 44 50	152 45 50	155 46 50	158 47 50	161 48 50	164 49 50	167 49 50	170 49 50	173 49 50	176 49 50	179 49 50	182 49 50	185 49 50	188 49 50	191 49 50	194 49 50	197 49 50	200 49 50
2	43 53	150 44 53	153 45 53	156 46 53	159 47 53	162 48 53	165 49 53	168 49 53	171 49 53	174 49 53	177 49 53	180 49 53	183 49 53	186 49 53	189 49 53	192 49 53	195 49 53	198 49 53	201 49 53
4	43 56	151 44 56	154 45 56	157 46 56	160 47 56	163 48 56	166 49 56	169 49 56	172 49 56	175 49 56	178 49 56	181 49 56	184 49 56	187 49 56	190 49 56	193 49 56	196 49 56	199 49 56	202 49 56
6	43 59	152 44 59	155 45 59	158 46 59	161 47 59	164 48 59	167 49 59	170 49 59	173 49 59	176 49 59	179 49 59	182 49 59	185 49 59	188 49 59	191 49 59	194 49 59	197 49 59	200 49 59	203 49 59
8	44 2	153 45 2	156 46 2	159 47 2	162 48 2	165 49 2	168 49 2	171 49 2	174 49 2	177 49 2	180 49 2	183 49 2	186 49 2	189 49 2	192 49 2	195 49 2	198 49 2	201 49 2	204 49 2
10	44 5	154 45 5	157 46 5	160 47 5	163 48 5	166 49 5	169 49 5	172 49 5	175 49 5	178 49 5	181 49 5	184 49 5	187 49 5	190 49 5	193 49 5	196 49 5	199 49 5	202 49 5	205 49 5
12	44 8	155 45 8	158 46 8	161 47 8	164 48 8	167 49 8	170 49 8	173 49 8	176 49 8	179 49 8	182 49 8	185 49 8	188 49 8	191 49 8	194 49 8	197 49 8	200 49 8	203 49 8	206 49 8
14	44 11	156 45 11	159 46 11	162 47 11	165 48 11	168 49 11	171 49 11	174 49 11	177 49 11	180 49 11	183 49 11	186 49 11	189 49 11	192 49 11	195 49 11	198 49 11	201 49 11	204 49 11	207 49 11
16	44 14	157 45 14	160 46 14	163 47 14	166 48 14	169 49 14	172 49 14	175 49 14	178 49 14	181 49 14	184 49 14	187 49 14	190 49 14	193 49 14	196 49 14	199 49 14	202 49 14	205 49 14	208 49 14
18	44 17	158 45 17	1																

(and 7)		The Correction of the Moon's Altitude, and the Aux. Angle A.																								(w.)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
		Minutes of Moon's Hor. Parallax.																								Seconds of H. P.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
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		Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr

(w.) The Correction of the Moon's Altitude, and the Aux. Angle A. (8° and 9°)

App Alt.	Minutes of Moon's Hor. Parallax.																d L
	54'		55'		56'		57'		58'		59'		60'		61'		
	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	
0'	46 54	3 26	47 54	3 31	48 53	3 36	49 53	3 42	50 52	3 47	51 51	3 52	52 51	3 58	53 50	4 3	1 1
2	46 55	3 27	47 55	3 32	48 54	3 38	49 54	3 43	50 53	3 48	51 53	3 54	52 52	3 59	53 51	4 4	2 2
4	46 57	3 29	47 56	3 33	48 55	3 39	49 55	3 44	50 54	3 49	51 54	3 55	52 53	4 0	53 53	4 5	3 3
6	46 58	3 29	47 57	3 34	48 57	3 40	49 56	3 45	50 55	3 51	51 55	3 56	52 54	4 1	53 54	4 6	4 4
8	46 59	3 30	47 58	3 35	48 58	3 41	49 57	3 46	50 56	3 52	51 56	3 57	52 55	4 2	53 55	4 7	5 5
10	47 0	3 31	47 59	3 37	48 59	3 42	49 58	3 47	50 57	3 53	51 57	3 58	52 56	4 3	53 56	4 8	6 6
12	47 1	3 32	48 0	3 38	49 0	3 43	49 59	3 49	50 58	3 54	51 58	3 59	52 58	4 4	53 57	4 10	7 7
14	47 2	3 33	48 2	3 39	49 1	3 44	50 0	3 50	50 59	3 56	51 59	4 0	52 59	4 5	53 58	4 11	8 8
16	47 3	3 34	48 3	3 40	49 2	3 45	50 2	3 51	51 0	3 56	52 0	4 1	53 0	4 6	53 59	4 12	9 9
18	47 4	3 35	48 4	3 41	49 3	3 47	50 3	3 52	51 1	3 57	52 1	4 2	53 1	4 7	54 0	4 13	10 10
20	47 5	3 36	48 5	3 42	49 4	3 48	50 4	3 53	51 2	3 58	52 2	4 3	53 2	4 8	54 1	4 14	11 11
22	47 7	3 38	48 6	3 43	49 6	3 49	50 5	3 54	51 4	4 0	52 4	4 4	53 3	4 10	54 2	4 15	12 12
24	47 8	3 39	48 7	3 44	49 7	3 50	50 6	3 55	51 5	4 1	52 5	4 5	53 4	4 11	54 3	4 16	13 13
26	47 9	3 40	48 8	3 45	49 8	3 51	50 7	3 56	51 6	4 2	52 6	4 6	53 5	4 12	54 4	4 17	14 14
28	47 10	3 41	48 9	3 47	49 9	3 52	50 8	3 58	51 7	4 3	52 7	4 7	53 6	4 13	54 5	4 18	15 15
30	47 11	3 42	48 11	3 48	49 10	3 53	50 9	3 59	51 8	4 4	52 8	4 8	53 7	4 14	54 6	4 19	16 16
32	47 12	3 43	48 12	3 49	49 11	3 54	50 10	4 0	51 9	4 5	52 9	4 9	53 8	4 15	54 7	4 20	17 17
34	47 13	3 44	48 13	3 50	49 12	3 55	50 11	4 1	51 10	4 6	52 10	4 10	53 9	4 16	54 8	4 21	18 18
36	47 15	3 45	48 14	3 51	49 13	3 56	50 12	4 2	51 11	4 7	52 11	4 11	53 10	4 17	54 9	4 22	19 19
38	47 16	3 46	48 15	3 52	49 14	3 57	50 13	4 3	51 12	4 8	52 12	4 12	53 11	4 18	54 10	4 23	20 20
40	47 17	3 47	48 16	3 53	49 15	3 58	50 14	4 4	51 13	4 9	52 13	4 13	53 12	4 19	54 11	4 24	21 21
42	47 18	3 48	48 17	3 54	49 16	4 0	50 15	4 5	51 14	4 10	52 14	4 14	53 13	4 20	54 12	4 25	22 22
44	47 19	3 50	48 18	3 55	49 17	4 1	50 16	4 6	51 15	4 11	52 15	4 15	53 14	4 21	54 13	4 26	23 23
46	47 20	3 51	48 19	3 56	49 18	4 2	50 17	4 7	51 16	4 12	52 16	4 16	53 15	4 22	54 14	4 27	24 24
48	47 21	3 52	48 20	3 57	49 19	4 3	50 18	4 8	51 17	4 13	52 17	4 17	53 16	4 23	54 15	4 28	25 25
50	47 22	3 53	48 21	3 58	49 20	4 4	50 19	4 9	51 18	4 14	52 18	4 18	53 17	4 24	54 16	4 29	26 26
52	47 23	3 54	48 22	4 0	49 21	4 5	50 20	4 10	51 19	4 15	52 19	4 19	53 18	4 25	54 17	4 30	27 27
54	47 24	3 55	48 23	4 1	49 22	4 6	50 21	4 11	51 20	4 16	52 20	4 20	53 19	4 26	54 18	4 31	28 28
56	47 25	3 56	48 24	4 2	49 23	4 7	50 22	4 12	51 21	4 17	52 21	4 21	53 20	4 27	54 19	4 32	29 29
58	47 26	3 57	48 25	4 3	49 24	4 8	50 23	4 13	51 22	4 18	52 22	4 22	53 21	4 28	54 20	4 33	30 30
60	47 27	3 58	48 26	4 4	49 25	4 9	50 24	4 14	51 23	4 19	52 23	4 23	53 22	4 29	54 21	4 34	31 31
62	47 28	3 59	48 27	4 5	49 26	4 10	50 25	4 15	51 24	4 20	52 24	4 24	53 23	4 30	54 22	4 35	32 32
64	47 29	4 0	48 28	4 6	49 27	4 11	50 26	4 16	51 25	4 21	52 25	4 25	53 24	4 31	54 23	4 36	33 33
66	47 30	4 1	48 29	4 7	49 28	4 12	50 27	4 17	51 26	4 22	52 26	4 26	53 25	4 32	54 24	4 37	34 34
68	47 31	4 2	48 30	4 8	49 29	4 13	50 28	4 18	51 27	4 23	52 27	4 27	53 26	4 33	54 25	4 38	35 35
70	47 32	4 3	48 31	4 9	49 30	4 14	50 29	4 19	51 28	4 24	52 28	4 28	53 27	4 34	54 26	4 39	36 36
72	47 33	4 4	48 32	4 10	49 31	4 15	50 30	4 20	51 29	4 25	52 29	4 29	53 28	4 35	54 27	4 40	37 37
74	47 34	4 5	48 33	4 11	49 32	4 16	50 31	4 21	51 30	4 26	52 30	4 30	53 29	4 36	54 28	4 41	38 38
76	47 35	4 6	48 34	4 12	49 33	4 17	50 32	4 22	51 31	4 27	52 31	4 31	53 30	4 37	54 29	4 42	39 39
78	47 36	4 7	48 35	4 13	49 34	4 18	50 33	4 23	51 32	4 28	52 32	4 32	53 31	4 38	54 30	4 43	40 40
80	47 37	4 8	48 36	4 14	49 35	4 19	50 34	4 24	51 33	4 29	52 33	4 33	53 32	4 39	54 31	4 44	41 41
82	47 38	4 9	48 37	4 15	49 36	4 20	50 35	4 25	51 34	4 30	52 34	4 34	53 33	4 40	54 32	4 45	42 42
84	47 39	4 10	48 38	4 16	49 37	4 21	50 36	4 26	51 35	4 31	52 35	4 35	53 34	4 41	54 33	4 46	43 43
86	47 40	4 11	48 39	4 17	49 38	4 22	50 37	4 27	51 36	4 32	52 36	4 36	53 35	4 42	54 34	4 47	44 44
88	47 41	4 12	48 40	4 18	49 39	4 23	50 38	4 28	51 37	4 33	52 37	4 37	53 36	4 43	54 35	4 48	45 45
90	47 42	4 13	48 41	4 19	49 40	4 24	50 39	4 29	51 38	4 34	52 38	4 38	53 37	4 44	54 36	4 49	46 46
92	47 43	4 14	48 42	4 20	49 41	4 25	50 40	4 30	51 39	4 35	52 39	4 39	53 38	4 45	54 37	4 50	47 47
94	47 44	4 15	48 43	4 21	49 42	4 26	50 41	4 31	51 40	4 36	52 40	4 40	53 39	4 46	54 38	4 51	48 48
96	47 45	4 16	48 44	4 22	49 43	4 27	50 42	4 32	51 41	4 37	52 41	4 41	53 40	4 47	54 39	4 52	49 49
98	47 46	4 17	48 45	4 23	49 44	4 28	50 43	4 33	51 42	4 38	52 42	4 42	53 41	4 48	54 40	4 53	50 50
100	47 47	4 18	48 46	4 24	49 45	4 29	50 44	4 34	51 43	4 39	52 43	4 43	53 42	4 49	54 41	4 54	51 51
102	47 48	4 19	48 47	4 25	49 46	4 30	50 45	4 35	51 44	4 40	52 44	4 44	53 43	4 50	54 42	4 55	52 52
104	47 49	4 20	48 48	4 26	49 47	4 31	50 46	4 36	51 45	4 41	52 45	4 45	53 44	4 51	54 43	4 56	53 53
106	47 50	4 21	48 49	4 27	49 48	4 32	50 47	4 37	51 46	4 42	52 46	4 46	53 45	4 52	54 44	4 57	54 54
108	47 51	4 22	48 50	4 28	49 49	4 33	50 48	4 38	51 47	4 43	52 47	4 47	53 46	4 53	54 45	4 58	55 55
110	47 52	4 23	48 51	4 29	49 50	4 34	50 49	4 39	51 48	4 44	52 48	4 48	53 47	4 54	54 46	4 59	56 56
112	47 53	4 24	48 52	4 30	49 51	4 35	50 50	4 40	51 49	4 45	52 49	4 49	53 48	4 55	54 47	5 0	57 57
114	47 54	4 25	48 53	4 31	49 52	4 36	50 51	4 41	51 50	4 46	52 50	4 50	53 49	4 56	54 48	5 1	58 58
116	47 55	4 26	48 54	4 32	49 53	4 37	50 52	4 42	51 51	4 47	52 51	4 51	53 50	4 57	54 49	5 2	59 59
118	47 56	4 27	48 55	4 33	49 54	4 38	50 53	4 43	51 52	4 48	52 52	4 52	53 51	4 58	54 50	5 3	60 60
120	47 57	4 28	48 56	4 34	49 55	4 39	50 54	4 44	51 53	4 49	52 53	4 53	53 52	4 59	54 51	5 4	61 61
122	47 58	4 29	48 57	4 35	49 56	4 40	50 55	4 45	51 54	4 50	52 54	4 54	53 53	4 60	54 52	5 5	62 62
124	47 59	4 30	48 58	4 36	49 57	4 41	50 56	4 46	51 55	4 51	52 55	4 55	53 54	4 61	54 53	5 6	63 63
126	48 0	4 31	48 59	4 37	49 58	4 42	50 57	4 47	51 56	4 52	52 56	4 56	53 55				

10° and 11° The Correction of the Moon's Altitude, and the Aux. Angle A. (w)

P	Minutes of Moon's Hor. Parallax.															Seconds of H P		
	54'		55'		56'		57'		58'		59'		60'		61'		A	Cor.
	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A				
0	+	60"	+	60"	+	60"	+	60"	+	60"	+	60"	+	60"	+	60"	1	0
0	17 52	4 30 48 51	4 37	49 50	4 43	50 49	4 50	51 48	4 56	52 47	5 3	53 46	5 9	54 45	5 16	55 44	1	0
1	17 52	4 31 48 51	4 38	49 51	4 45	50 50	4 51	51 49	4 58	52 48	5 4	53 47	5 11	54 46	5 17	55 45	2	0
2	17 53	4 33 48 52	4 39	49 51	4 46	50 50	4 52	51 49	4 59	52 48	5 5	53 48	5 12	54 47	5 18	55 46	3	0
3	17 54	4 34 48 53	4 40	49 52	4 47	50 51	4 53	51 50	5 0	52 49	5 6	53 48	5 13	54 47	5 20	55 47	4	0
4	17 54	4 35 48 53	4 41	49 52	4 48	50 52	4 54	51 51	5 1	52 50	5 7	53 49	5 14	54 48	5 21	55 48	5	0
5	17 55	4 36 48 54	4 42	49 53	4 49	50 52	4 55	51 51	5 2	52 50	5 8	53 49	5 15	54 49	5 22	55 49	6	0
6	17 56	4 37 48 55	4 43	49 54	4 50	50 53	4 57	51 52	5 3	52 51	5 9	53 50	5 16	54 49	5 23	55 50	7	0
7	17 56	4 38 48 55	4 44	49 54	4 51	50 54	4 58	51 53	5 4	52 52	5 10	53 51	5 17	54 50	5 24	55 51	8	0
8	17 57	4 39 48 56	4 45	49 55	4 52	50 54	4 59	51 53	5 5	52 52	5 11	53 51	5 18	54 50	5 26	55 52	9	0
9	17 58	4 40 48 57	4 47	49 56	4 53	50 55	5 0	51 54	5 6	52 53	5 12	53 52	5 19	54 51	5 27	55 53	10	0
10	17 58	4 41 48 57	4 48	49 56	4 54	50 55	5 1	51 54	5 7	52 54	5 13	53 53	5 20	54 52	5 28	55 54	11	0
11	17 59	4 42 48 58	4 49	49 57	4 55	50 56	5 2	51 55	5 8	52 54	5 14	53 53	5 21	54 52	5 29	55 55	12	0
12	18 0	4 43 48 59	4 50	49 58	4 57	50 57	5 3	51 56	5 9	52 55	5 15	53 54	5 22	54 53	5 31	55 56	13	0
13	18 0	4 44 48 59	4 51	49 58	4 58	50 57	5 4	51 56	5 10	52 55	5 16	53 54	5 23	54 54	5 32	55 57	14	0
14	18 1	4 45 49 0	4 52	49 59	4 59	50 58	5 5	51 57	5 11	52 56	5 17	53 55	5 24	54 54	5 33	55 58	15	0
15	18 2	4 46 49 1	4 53	50 0	5 0	50 59	5 6	51 58	5 12	52 57	5 18	53 56	5 25	54 55	5 34	55 59	16	0
16	18 2	4 47 49 1	4 54	50 0	5 1	50 59	5 7	51 58	5 13	52 57	5 19	53 56	5 26	54 55	5 35	56 00	17	0
17	18 3	4 48 49 2	4 55	50 1	5 2	51 0	5 8	51 59	5 14	52 58	5 20	53 57	5 27	54 56	5 36	56 01	18	0
18	18 4	4 49 49 3	4 56	50 2	5 3	51 1	5 9	52 0	5 15	52 59	5 21	53 58	5 28	54 57	5 37	56 02	19	0
19	18 4	4 50 49 3	4 57	50 3	5 4	51 2	5 10	52 1	5 16	53 0	5 22	53 59	5 29	55 00	5 38	56 03	20	0
20	18 5	4 51 49 4	4 58	50 4	5 5	51 3	5 11	52 2	5 17	53 1	5 23	54 0	5 30	55 01	5 39	56 04	21	0
21	18 5	4 52 49 4	4 59	50 5	5 6	51 4	5 12	52 3	5 18	53 2	5 24	54 1	5 31	55 02	5 40	56 05	22	0
22	18 6	4 53 49 5	5 0	50 6	5 7	51 5	5 13	52 4	5 19	53 3	5 25	54 2	5 32	55 03	5 41	56 06	23	0
23	18 6	4 54 49 5	5 1	50 7	5 8	52 0	5 14	52 5	5 20	53 4	5 26	54 3	5 33	55 04	5 42	56 07	24	0
24	18 7	4 55 49 6	5 2	50 8	5 9	52 1	5 15	52 6	5 21	53 5	5 27	54 4	5 34	55 05	5 43	56 08	25	0
25	18 7	4 56 49 6	5 3	50 9	5 10	52 2	5 16	52 7	5 22	53 6	5 28	54 5	5 35	55 06	5 44	56 09	26	0
26	18 8	4 57 49 7	5 4	50 10	5 11	52 3	5 17	52 8	5 23	53 7	5 29	54 6	5 36	55 07	5 45	56 10	27	0
27	18 8	4 58 49 7	5 5	50 11	5 12	52 4	5 18	52 9	5 24	53 8	5 30	54 7	5 37	55 08	5 46	56 11	28	0
28	18 9	4 59 49 8	5 6	50 12	5 13	52 5	5 19	52 10	5 25	53 9	5 31	54 8	5 38	55 09	5 47	56 12	29	0
29	18 9	5 0 49 8	5 7	50 13	5 14	52 6	5 20	52 11	5 26	53 10	5 32	54 9	5 39	55 10	5 48	56 13	30	0
30	18 10	5 1 49 9	5 8	50 14	5 15	52 7	5 21	52 12	5 27	53 11	5 33	54 10	5 40	55 11	5 49	56 14	31	0
31	18 10	5 2 49 9	5 9	50 15	5 16	52 8	5 22	52 13	5 28	53 12	5 34	54 11	5 41	55 12	5 50	56 15	32	0
32	18 11	5 3 49 10	5 10	50 16	5 17	52 9	5 23	52 14	5 29	53 13	5 35	54 12	5 42	55 13	5 51	56 16	33	0
33	18 11	5 4 49 10	5 11	50 17	5 18	52 10	5 24	52 15	5 30	53 14	5 36	54 13	5 43	55 14	5 52	56 17	34	0
34	18 12	5 5 49 11	5 12	50 18	5 19	52 11	5 25	52 16	5 31	53 15	5 37	54 14	5 44	55 15	5 53	56 18	35	0
35	18 12	5 6 49 11	5 13	50 19	5 20	52 12	5 26	52 17	5 32	53 16	5 38	54 15	5 45	55 16	5 54	56 19	36	0
36	18 13	5 7 49 12	5 14	50 20	5 21	52 13	5 27	52 18	5 33	53 17	5 39	54 16	5 46	55 17	5 55	56 20	37	0
37	18 13	5 8 49 12	5 15	50 21	5 22	52 14	5 28	52 19	5 34	53 18	5 40	54 17	5 47	55 18	5 56	56 21	38	0
38	18 13	5 9 49 13	5 16	50 22	5 23	52 15	5 29	52 20	5 35	53 19	5 41	54 18	5 48	55 19	5 57	56 22	39	0
39	18 14	5 10 49 13	5 17	50 23	5 24	52 16	5 30	52 21	5 36	53 20	5 42	54 19	5 49	55 20	5 58	56 23	40	0
40	18 14	5 11 49 14	5 18	50 24	5 25	52 17	5 31	52 22	5 37	53 21	5 43	54 20	5 50	55 21	5 59	56 24	41	0
41	18 14	5 12 49 14	5 19	50 25	5 26	52 18	5 32	52 23	5 38	53 22	5 44	54 21	5 51	55 22	6 00	56 25	42	0
42	18 15	5 13 49 15	5 20	50 26	5 27	52 19	5 33	52 24	5 39	53 23	5 45	54 22	5 52	55 23	6 01	56 26	43	0
43	18 15	5 14 49 15	5 21	50 27	5 28	52 20	5 34	52 25	5 40	53 24	5 46	54 23	5 53	55 24	6 02	56 27	44	0
44	18 16	5 15 49 16	5 22	50 28	5 29	52 21	5 35	52 26	5 41	53 25	5 47	54 24	5 54	55 25	6 03	56 28	45	0
45	18 16	5 16 49 16	5 23	50 29	5 30	52 22	5 36	52 27	5 42	53 26	5 48	54 25	5 55	55 26	6 04	56 29	46	0
46	18 17	5 17 49 17	5 24	50 30	5 31	52 23	5 37	52 28	5 43	53 27	5 49	54 26	5 56	55 27	6 05	56 30	47	0
47	18 17	5 18 49 17	5 25	50 31	5 32	52 24	5 38	52 29	5 44	53 28	5 50	54 27	5 57	55 28	6 06	56 31	48	0
48	18 18	5 19 49 18	5 26	50 32	5 33	52 25	5 39	52 30	5 45	53 29	5 51	54 28	5 58	55 29	6 07	56 32	49	0
49	18 18	5 20 49 18	5 27	50 33	5 34	52 26	5 40	52 31	5 46	53 30	5 52	54 29	5 59	55 30	6 08	56 33	50	0
50	18 19	5 21 49 19	5 28	50 34	5 35	52 27	5 41	52 32	5 47	53 31	5 53	54 30	5 60	55 31	6 09	56 34	51	0
51	18 19	5 22 49 19	5 29	50 35	5 36	52 28	5 42	52 33	5 48	53 32	5 54	54 31	5 61	55 32	6 10	56 35	52	0
52	18 20	5 23 49 20	5 30	50 36	5 37	52 29	5 43	52 34	5 49	53 33	5 55	54 32	5 62	55 33	6 11	56 36	53	0
53	18 20	5 24 49 20	5 31	50 37	5 38	52 30	5 44	52 35	5 50	53 34	5 56	54 33	5 63	55 34	6 12	56 37	54	0
54	18 21	5 25 49 21	5 32	50 38	5 39	52 31	5 45	52 36	5 51	53 35	5 57	54 34	5 64	55 35	6 13	56 38	55	0
55	18 21	5 26 49 21	5 33	50 39	5 40	52 32	5 46	52 37	5 52	53 36	5 58	54 35	5 65	55 36	6 14	56 39	56	0
56	18 22	5 27 49 22	5 34	50 40	5 41	52 33	5 47	52 38	5 53	53 37	5 59	54 36	5 66	55 37	6 15	56 40	57	0
57	18 22	5 28 49 22	5 35	50 41	5 42	52 34	5 48	52 39	5 54	53 38	5 60	54 37	5 67	55 38	6 16	56 41	58	0
58	18 23	5 29 49 23	5 36	50 42	5 43	52 35	5 49	52 40	5 55	53 39	5 61	54 38	5 68	55 39	6 17	56 42	59	0
59	18 23	5 30 49 23	5 37	50 43	5 44	52 36	5 50	52 41	5 56	53 40	5 62	54 39	5 69	55 40	6 18	56 43	60	0
60	18 24	5 3																

(w.)		The Correction of the Moon's Altitude, and the Aux. Angle A. (12° and 13°)																				Seconds of H. P.	
App. Alt.	12°	Minutes of Moon's Hor. Parallax.																				Corr.	A
		54'		55'		56'		57'		58'		59'		60'		61'							
		Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A						
0'	43 22	5 34	49 21	5 42	50 19	5 50	51 18	5 57	52 17	6 5	53 13	6 13	54 14	6 20	55 13	6 28							
2	48 22	5 35	49 21	5 43	50 20	5 51	51 18	5 58	52 17	6 6	53 16	6 14	54 14	6 22	55 13	6 29							
4	48 23	5 36	49 21	5 44	50 20	5 52	51 19	6 0	52 17	6 7	53 16	6 15	54 15	6 23	55 13	6 31							
6	48 23	5 36	49 22	5 45	50 20	5 53	51 19	6 1	52 18	6 9	53 16	6 16	54 15	6 24	55 14	6 32							
8	48 23	5 39	49 22	5 46	50 21	5 54	51 19	6 2	53 18	6 10	53 17	6 17	54 15	6 25	55 14	6 33							
10	48 24	5 40	49 22	5 47	50 21	5 55	51 20	6 3	53 18	6 11	53 17	6 19	54 16	6 26	55 14	6 34							
12	48 24	5 41	49 23	5 49	50 21	5 56	51 20	6 4	53 19	6 12	53 17	6 20	54 16	6 28	55 15	6 35							
14	48 25	5 42	49 23	5 50	50 22	5 58	51 20	6 5	53 19	6 13	53 18	6 21	54 16	6 29	55 15	6 37							
16	48 25	5 43	49 23	5 51	50 22	5 59	51 21	6 6	53 19	6 14	53 18	6 22	54 16	6 30	55 15	6 38							
18	48 25	5 44	49 24	5 52	50 22	6 0	51 21	6 8	53 19	6 15	53 18	6 23	54 17	6 31	55 16	6 39							
20	48 25	5 45	49 24	5 53	50 22	6 1	51 21	6 9	53 20	6 17	53 18	6 24	54 17	6 32	55 16	6 40							
22	48 26	5 46	49 24	5 54	50 23	6 2	51 21	6 10	53 20	6 18	53 19	6 25	54 17	6 33	55 16	6 41							
24	48 26	5 47	49 24	5 55	50 23	6 3	51 22	6 11	53 20	6 19	53 19	6 27	54 18	6 35	55 16	6 43							
26	48 26	5 48	49 25	5 56	50 23	6 4	51 22	6 12	53 21	6 20	53 19	6 28	54 18	6 36	55 16	6 44							
28	48 26	5 49	49 25	5 57	50 24	6 5	51 22	6 13	53 21	6 21	53 19	6 29	54 18	6 37	55 17	6 45							
30	48 27	5 50	49 25	5 58	50 24	6 6	51 22	6 14	53 21	6 22	53 20	6 30	54 18	6 38	55 17	6 46							
32	48 27	5 51	49 26	5 59	50 24	6 7	51 23	6 15	53 21	6 23	53 20	6 31	54 19	6 39	55 17	6 47							
34	48 27	5 52	49 26	6 0	50 24	6 8	51 23	6 16	53 22	6 25	53 20	6 33	54 19	6 41	55 17	6 49							
36	48 28	5 53	49 26	6 1	50 25	6 10	51 23	6 18	53 22	6 26	53 20	6 34	54 19	6 42	55 18	6 50							
38	48 28	5 54	49 26	6 2	50 25	6 11	51 24	6 19	53 22	6 27	53 21	6 35	54 19	6 43	55 18	6 51							
40	48 28	5 55	49 27	6 3	50 25	6 12	51 24	6 20	53 22	6 28	53 21	6 36	54 19	6 44	55 18	6 52							
42	48 28	5 57	49 27	6 5	50 25	6 13	51 24	6 21	53 23	6 29	53 21	6 37	54 20	6 45	55 18	6 53							
44	48 29	5 58	49 27	6 6	50 26	6 14	51 24	6 22	53 23	6 30	53 21	6 38	54 20	6 46	55 18	6 54							
46	48 29	5 59	49 27	6 7	50 26	6 15	51 24	6 23	53 23	6 31	53 21	6 39	54 20	6 48	55 19	6 56							
48	48 29	6 0	49 28	6 8	50 26	6 16	51 25	6 24	53 23	6 32	53 22	6 41	54 20	6 49	55 19	6 57							
50	48 29	6 1	49 28	6 9	50 26	6 17	51 25	6 25	53 23	6 33	53 22	6 42	54 20	6 50	55 19	6 58							
52	48 29	6 2	49 28	6 10	50 26	6 18	51 25	6 27	53 23	6 35	53 22	6 43	54 21	6 51	55 19	6 59							
54	48 30	6 3	49 28	6 11	50 27	6 19	51 25	6 28	53 24	6 36	53 22	6 44	54 21	6 52	55 19	7 1							
56	48 30	6 4	49 28	6 12	50 27	6 20	51 25	6 29	53 24	6 37	53 22	6 45	54 21	6 53	55 19	7 2							
58	48 30	6 5	49 29	6 13	50 27	6 22	51 26	6 30	53 24	6 38	53 23	6 46	54 21	6 54	55 20	7 3							
13°	54'		55'		56'		57'		58'		59'		60'		61'								
0	48 29	6 6	49 29	6 14	50 27	6 23	51 26	6 31	53 24	6 39	53 23	6 48	54 21	6 56	55 20	7 4							
2	48 30	6 7	49 29	6 15	50 27	6 24	51 26	6 32	53 24	6 40	53 23	6 49	54 21	6 57	55 20	7 5							
4	48 31	6 8	49 29	6 17	50 28	6 25	51 26	6 33	53 24	6 42	53 23	6 50	54 21	6 58	55 20	7 7							
6	48 31	6 9	49 29	6 18	50 28	6 26	51 26	6 34	53 25	6 43	53 23	6 51	54 22	6 59	55 20	7 8							
8	48 31	6 10	49 29	6 19	50 28	6 27	51 26	6 35	53 25	6 44	53 23	6 52	54 22	7 0	55 20	7 9							
10	48 31	6 11	49 30	6 20	50 28	6 28	51 26	6 37	53 25	6 45	53 23	6 53	54 22	7 1	55 20	7 10							
12	48 31	6 12	49 30	6 21	50 28	6 29	51 27	6 38	53 25	6 46	53 24	6 55	54 22	7 2	55 20	7 11							
14	48 32	6 14	49 30	6 22	50 28	6 30	51 27	6 39	53 25	6 47	53 24	6 56	54 22	7 3	55 21	7 12							
16	48 32	6 15	49 30	6 23	50 29	6 31	51 27	6 40	53 25	6 48	53 24	6 57	54 22	7 4	55 21	7 13							
18	48 32	6 16	49 30	6 24	50 29	6 33	51 27	6 41	53 26	6 50	53 24	6 58	54 22	7 5	55 21	7 14							
20	48 32	6 17	49 30	6 25	50 29	6 34	51 27	6 42	53 26	6 51	53 24	6 59	54 23	7 6	55 21	7 15							
22	48 32	6 18	49 31	6 26	50 29	6 35	51 27	6 43	53 26	6 52	53 24	7 0	54 23	7 7	55 21	7 16							
24	48 32	6 19	49 31	6 27	50 29	6 36	51 28	6 44	53 26	6 53	53 24	7 1	54 23	7 8	55 21	7 17							
26	48 32	6 20	49 31	6 28	50 29	6 37	51 28	6 45	53 26	6 54	53 24	7 2	54 23	7 9	55 21	7 18							
28	48 33	6 21	49 31	6 29	50 29	6 38	51 28	6 47	53 26	6 55	53 25	7 3	54 23	7 10	55 21	7 19							
30	48 33	6 22	49 31	6 31	50 29	6 39	51 28	6 48	53 26	6 56	53 25	7 4	54 23	7 11	55 21	7 20							
32	48 33	6 23	49 31	6 32	50 30	6 40	51 28	6 49	53 26	6 57	53 25	7 5	54 23	7 12	55 22	7 21							
34	48 33	6 24	49 31	6 33	50 30	6 41	51 28	6 50	53 26	6 59	53 25	7 6	54 23	7 13	55 22	7 22							
36	48 33	6 25	49 31	6 34	50 30	6 42	51 28	6 51	53 27	7 0	53 25	7 7	54 23	7 14	55 22	7 23							
38	48 33	6 26	49 32	6 35	50 30	6 44	51 28	6 52	53 27	7 1	53 25	7 8	54 23	7 15	55 22	7 24							
40	48 33	6 27	49 32	6 36	50 30	6 45	51 28	6 53	53 27	7 2	53 25	7 9	54 23	7 16	55 22	7 25							
42	48 34	6 28	49 32	6 37	50 30	6 46	51 29	6 54	53 27	7 3	53 25	7 10	54 24	7 17	55 22	7 26							
44	48 34	6 29	49 32	6 38	50 30	6 47	51 29	6 55	53 27	7 4	53 25	7 11	54 24	7 18	55 22	7 27							
46	48 34	6 30	49 32	6 39	50 30	6 48	51 29	6 57	53 27	7 5	53 25	7 12	54 24	7 19	55 22	7 28							
48	48 34	6 31	49 32	6 40	50 31	6 49	51 29	6 58	53 27	7 6	53 25	7 13	54 24	7 20	55 22	7 29							
50	48 34	6 32	49 32	6 41	50 31	6 50	51 29	6 59	53 27	7 7	53 25	7 14	54 24	7 21	55 22	7 30							
52	48 34	6 34	49 32	6 42	50 31	6 51	51 29	7 0	53 27	7 8	53 26	7 15	54 24	7 22	55 22	7 31							
54	48 34	6 35	49 33	6 43	50 31	6 52	51 29	7 1	53 27	7 10	53 26	7 16	54 24	7 23	55 22	7 32							
56	48 34	6 36	49 33	6 45	50 31	6 53	51 29	7 2	53 27	7 11	53 26	7 17	54 24	7 24	55 22	7 33							
58	48 35	6 37	49 33	6 46	50 31	6 54	51 29	7 3	53 28	7 12	53 26	7 18	54 24	7 25	55 22	7 34							

(14° and 15°) The Correction of the Moon's Altitude, and the Aux. Angle A.																	(w.)	
App. Alt.	Minutes of Moon's Hor. Parallax.																Seconds of H. P.	
	54'		55'		56'		57'		58'		59'		60'		61'		n	A
14°	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	1	2
0'	48 35	6 38	49 33	6 47	50 31	6 56	51 29	7 4	52 28	7 13	53 26	7 22	54 24	7 31	55 22	7 40	2	0
2	48 35	6 39	49 33	6 48	50 31	6 57	51 29	7 6	52 28	7 14	53 26	7 23	54 24	7 32	55 22	7 41	3	1
4	48 35	6 40	49 33	6 49	50 31	6 58	51 30	7 7	52 28	7 15	53 26	7 24	54 24	7 33	55 22	7 42	4	2
6	48 35	6 41	49 33	6 50	50 31	6 59	51 30	7 8	52 28	7 16	53 26	7 25	54 24	7 34	55 22	7 43	5	3
8	48 35	6 42	49 33	6 51	50 32	7 0	51 30	7 9	52 28	7 17	53 26	7 26	54 24	7 35	55 22	7 44	6	4
10	48 35	6 43	49 33	6 52	50 32	7 1	51 30	7 10	52 28	7 18	53 26	7 27	54 24	7 36	55 22	7 45	7	5
12	48 35	6 44	49 33	6 53	50 32	7 2	51 30	7 11	52 28	7 19	53 26	7 28	54 24	7 37	55 22	7 46	8	6
14	48 35	6 45	49 34	6 54	50 32	7 3	51 30	7 12	52 28	7 20	53 26	7 29	54 24	7 38	55 22	7 47	9	7
16	48 35	6 46	49 34	6 55	50 32	7 4	51 30	7 13	52 28	7 21	53 26	7 30	54 24	7 39	55 22	7 48	10	8
18	48 35	6 47	49 34	6 56	50 32	7 5	51 30	7 14	52 28	7 22	53 26	7 31	54 24	7 40	55 22	7 49	11	9
20	48 35	6 48	49 34	6 57	50 32	7 6	51 30	7 15	52 28	7 23	53 26	7 32	54 24	7 41	55 22	7 50	12	10
22	48 35	6 49	49 34	6 58	50 32	7 7	51 30	7 16	52 28	7 24	53 26	7 33	54 24	7 42	55 22	7 51	13	11
24	48 35	6 50	49 34	7 0	50 32	7 8	51 30	7 17	52 28	7 25	53 26	7 34	54 24	7 43	55 22	7 52	14	12
26	48 35	6 51	49 34	7 1	50 32	7 9	51 30	7 18	52 28	7 26	53 26	7 35	54 24	7 44	55 22	7 53	15	13
28	48 35	6 52	49 34	7 2	50 32	7 10	51 30	7 19	52 28	7 27	53 26	7 36	54 24	7 45	55 22	7 54	16	14
30	48 35	6 53	49 34	7 3	50 32	7 11	51 30	7 20	52 28	7 28	53 26	7 37	54 24	7 46	55 22	7 55	17	15
32	48 35	6 54	49 34	7 4	50 32	7 12	51 30	7 21	52 28	7 29	53 26	7 38	54 24	7 47	55 22	7 56	18	16
34	48 35	6 55	49 34	7 5	50 32	7 13	51 30	7 22	52 28	7 30	53 26	7 39	54 24	7 48	55 22	7 57	19	17
36	48 35	6 56	49 34	7 6	50 32	7 14	51 30	7 23	52 28	7 31	53 26	7 40	54 24	7 49	55 22	7 58	20	18
38	48 35	6 57	49 34	7 7	50 32	7 15	51 30	7 24	52 28	7 32	53 26	7 41	54 24	7 50	55 22	7 59	21	19
40	48 35	6 58	49 34	7 8	50 32	7 16	51 30	7 25	52 28	7 33	53 26	7 42	54 24	7 51	55 22	8 0	22	20
42	48 35	7 0	49 34	7 9	50 32	7 17	51 30	7 26	52 28	7 34	53 26	7 43	54 24	7 52	55 22	8 1	23	21
44	48 35	7 1	49 34	7 10	50 32	7 18	51 30	7 27	52 28	7 35	53 26	7 44	54 24	7 53	55 22	8 2	24	22
46	48 35	7 2	49 34	7 11	50 32	7 19	51 30	7 28	52 28	7 36	53 26	7 45	54 24	7 54	55 22	8 3	25	23
48	48 35	7 3	49 34	7 12	50 32	7 20	51 30	7 29	52 28	7 37	53 26	7 46	54 24	7 55	55 22	8 4	26	24
50	48 35	7 4	49 34	7 13	50 32	7 21	51 30	7 30	52 28	7 38	53 26	7 47	54 24	7 56	55 22	8 5	27	25
52	48 35	7 5	49 34	7 14	50 32	7 22	51 30	7 31	52 28	7 39	53 26	7 48	54 24	7 57	55 22	8 6	28	26
54	48 35	7 6	49 34	7 15	50 32	7 23	51 30	7 32	52 28	7 40	53 26	7 49	54 24	7 58	55 22	8 7	29	27
56	48 35	7 7	49 34	7 16	50 32	7 24	51 30	7 33	52 28	7 41	53 26	7 50	54 24	7 59	55 22	8 8	30	28
58	48 35	7 8	49 34	7 17	50 32	7 25	51 30	7 34	52 28	7 42	53 26	7 51	54 24	8 0	55 22	8 9	31	29
60	48 35	7 9	49 34	7 18	50 32	7 26	51 30	7 35	52 28	7 43	53 26	7 52	54 24	8 1	55 22	8 10	32	30
15°	54'	55'	56'	57'	58'	59'	60'	61'									33	31
0'	48 36	7 9	49 34	7 19	50 32	7 28	51 30	7 38	53 26	7 47	53 26	7 57	54 24	8 0	56 22	8 16	41	40
2	48 36	7 10	49 34	7 20	50 32	7 29	51 30	7 39	53 26	7 48	53 26	7 58	54 24	8 1	56 22	8 17	42	41
4	48 36	7 11	49 34	7 21	50 32	7 30	51 30	7 40	53 26	7 49	53 26	7 59	54 24	8 2	56 22	8 18	43	42
6	48 36	7 13	49 34	7 22	50 32	7 32	51 30	7 41	53 26	7 51	53 26	8 0	54 24	8 10	56 22	8 19	44	43
8	48 36	7 14	49 34	7 23	50 32	7 33	51 30	7 42	53 26	7 52	53 26	8 1	54 24	8 11	56 22	8 20	45	44
10	48 36	7 15	49 34	7 24	50 32	7 34	51 30	7 43	53 26	7 53	53 26	8 2	54 24	8 12	56 22	8 21	46	45
12	48 36	7 16	49 34	7 25	50 32	7 35	51 30	7 44	53 26	7 54	53 26	8 3	54 24	8 13	56 22	8 22	47	46
14	48 36	7 17	49 34	7 26	50 32	7 36	51 30	7 45	53 26	7 55	53 26	8 4	54 23	8 14	56 21	8 23	48	47
16	48 36	7 18	49 34	7 27	50 32	7 37	51 30	7 46	53 26	7 56	53 26	8 5	54 23	8 15	56 21	8 24	49	48
18	48 36	7 19	49 34	7 28	50 32	7 38	51 30	7 47	53 26	7 57	53 26	8 6	54 23	8 16	56 21	8 25	50	49
20	48 36	7 20	49 34	7 29	50 32	7 39	51 30	7 48	53 27	7 58	53 26	8 7	54 23	8 17	56 21	8 26	51	50
22	48 36	7 21	49 34	7 30	50 32	7 40	51 30	7 49	53 27	7 59	53 26	8 8	54 23	8 18	56 21	8 27	52	51
24	48 36	7 22	49 34	7 31	50 32	7 41	51 30	7 50	53 27	8 0	53 26	8 9	54 23	8 19	56 21	8 28	53	52
26	48 36	7 23	49 34	7 32	50 32	7 42	51 29	7 51	53 27	8 1	53 26	8 10	54 23	8 20	56 21	8 29	54	53
28	48 36	7 24	49 34	7 33	50 31	7 43	51 29	7 52	53 27	8 2	53 26	8 11	54 23	8 21	56 21	8 30	55	54
30	48 36	7 25	49 33	7 34	50 31	7 44	51 29	7 53	53 27	8 3	53 26	8 12	54 23	8 22	56 21	8 31	56	55
32	48 36	7 26	49 33	7 35	50 31	7 45	51 29	7 54	53 27	8 4	53 25	8 13	54 23	8 23	56 20	8 32	57	56
34	48 36	7 27	49 33	7 36	50 31	7 46	51 29	7 55	53 27	8 5	53 25	8 14	54 22	8 24	56 20	8 33	58	57
36	48 36	7 28	49 33	7 37	50 31	7 47	51 29	7 56	53 27	8 6	53 25	8 15	54 22	8 25	56 20	8 34	59	58
38	48 36	7 29	49 33	7 38	50 31	7 48	51 29	7 57	53 27	8 7	53 24	8 16	54 22	8 26	56 20	8 35	60	59
40	48 36	7 30	49 33	7 39	50 31	7 49	51 29	7 58	53 27	8 8	53 24	8 17	54 22	8 27	56 20	8 36	61	60
42	48 36	7 31	49 33	7 40	50 31	7 50	51 29	7 59	53 27	8 9	53 24	8 18	54 22	8 28	56 20	8 37	62	61
44	48 36	7 32	49 33	7 41	50 31	7 51	51 29	8 0	53 27	8 10	53 24	8 19	54 22	8 29	56 20	8 38	63	62
46	48 36	7 33	49 33	7 42	50 31	7 52	51 29	8 1	53 27	8 11	53 24	8 20	54 22	8 30	56 20	8 39	64	63
48	48 36	7 34	49 33	7 43	50 31	7 53	51 29	8 2	53 27	8 12	53 24	8 21	54 22	8 31	56 20	8 40	65	64
50	48 36	7 35	49 33	7 44	50 31	7 54	51 29	8 3	53 27	8 13	53 24	8 22	54 22	8 32	56 20	8 41	66	65
52	48 36	7 36	49 33	7 45	50 31	7 55	51 29	8 4	53 27	8 14	53 24	8 23	54 22	8 33	56 19	8 42	67	66
54	48 36	7 37	49 33	7 46	50 31	7 56	51 29	8 5	53 27	8 15	53 24	8 24	54 22	8 34	56 19	8 43	68	67
56	48 36	7 38	49 33	7 47	50 31	7 57	51 29	8 6	53 26	8 16	53 24	8 25	54 22	8 35	56 19	8 44	69	68
58	48 36	7 39	49 33	7 48	50 31	7 58	51 29	8 7	53 26	8 17	53 24	8 26	54 22	8 36	56 19	8 45	70</	

(w.) The Correction of the Moon's Altitude, and the Aux. Angle A. (16° and 17°)

App. Alt.	Minutes of Moon's Hor. Parallax.																Seconds of H. P.	
	54'		55'		56'		57'		58'		59'		60'		61'		'	"
16°	Corr. +	A 60'	Corr. +	A 60'	Corr. +	A 60'	Corr. +	A 60'	Corr. +	A 60'	Corr. +	A 60'	Corr. +	A 60'	Corr. +	A 60'		
0'	48 36	7 41	49 33	7 51	50 31	8 1	51 28	8 11	52 26	8 21	53 23	8 31	54 21	8 41	55 19	8 50	1	0
2	48 36	7 42	49 33	7 52	50 31	8 2	51 28	8 12	52 26	8 22	53 23	8 32	54 21	8 42	55 18	8 52	2	0
4	48 35	7 43	49 33	7 53	50 30	8 3	51 28	8 13	52 26	8 23	53 23	8 33	54 21	8 43	55 18	8 53	4	0
6	48 35	7 44	49 33	7 54	50 30	8 4	51 28	8 14	52 25	8 24	53 23	8 34	54 20	8 44	55 18	8 54	6	0
8	48 35	7 45	49 32	7 55	50 30	8 5	51 28	8 15	52 25	8 25	53 23	8 35	54 20	8 45	55 18	8 55	8	0
10	48 34	7 46	49 32	7 56	50 30	8 6	51 27	8 16	52 25	8 26	53 23	8 36	54 20	8 47	55 18	8 57	10	0
12	48 34	7 47	49 32	7 57	50 30	8 7	51 27	8 17	52 25	8 27	53 22	8 38	54 20	8 48	55 18	8 58	12	0
14	48 34	7 48	49 32	7 58	50 29	8 8	51 27	8 18	52 25	8 28	53 22	8 39	54 20	8 49	55 17	8 59	14	0
16	48 34	7 49	49 32	7 59	50 29	8 9	51 27	8 19	52 24	8 30	53 22	8 40	54 20	8 50	55 17	9 0	16	0
18	48 34	7 50	49 31	8 0	50 29	8 10	51 27	8 21	52 24	8 31	53 22	8 41	54 19	8 51	55 17	9 2	18	0
20	48 33	7 51	49 31	8 1	50 29	8 11	51 26	8 22	52 24	8 32	53 22	8 42	54 19	8 52	55 17	9 4	20	0
22	48 33	7 52	49 31	8 2	50 29	8 12	51 26	8 23	52 24	8 33	53 21	8 43	54 19	8 53	55 17	9 6	22	0
24	48 33	7 53	49 31	8 3	50 28	8 13	51 26	8 24	52 24	8 34	53 21	8 44	54 19	8 54	55 16	9 8	24	0
26	48 33	7 54	49 31	8 4	50 28	8 15	51 26	8 25	52 23	8 35	53 21	8 45	54 19	8 55	55 16	9 10	26	0
28	48 33	7 55	49 31	8 5	50 28	8 16	51 26	8 26	52 23	8 36	53 21	8 47	54 18	8 57	55 16	9 12	28	0
30	48 33	7 56	49 30	8 6	50 28	8 17	51 26	8 27	52 23	8 38	53 21	8 48	54 18	8 58	55 16	9 14	30	0
32	48 33	7 57	49 30	8 8	50 28	8 18	51 25	8 28	52 23	8 39	53 21	8 49	54 18	8 59	55 16	9 16	32	0
34	48 33	7 58	49 30	8 9	50 28	8 19	51 25	8 29	52 23	8 40	53 20	8 50	54 18	9 0	55 15	9 18	34	0
36	48 33	7 59	49 30	8 10	50 28	8 20	51 25	8 31	52 23	8 41	53 20	8 51	54 18	9 2	55 15	9 20	36	0
38	48 32	8 0	49 30	8 11	50 27	8 21	51 25	8 32	52 22	8 42	53 20	8 52	54 17	9 3	55 15	9 22	38	0
40	48 32	8 1	49 30	8 12	50 27	8 22	51 25	8 33	52 22	8 43	53 20	8 54	54 17	9 4	55 15	9 24	40	0
42	48 32	8 3	49 30	8 13	50 27	8 23	51 25	8 34	52 22	8 44	53 20	8 55	54 17	9 5	55 15	9 26	42	0
44	48 32	8 4	49 29	8 14	50 27	8 25	51 24	8 36	52 22	8 46	53 19	8 56	54 17	9 6	55 14	9 28	44	0
46	48 32	8 5	49 29	8 15	50 27	8 26	51 24	8 37	52 22	8 47	53 19	8 57	54 17	9 7	55 14	9 30	46	0
48	48 32	8 6	49 29	8 16	50 27	8 27	51 24	8 38	52 21	8 48	53 19	8 58	54 16	9 8	55 14	9 32	48	0
50	48 32	8 7	49 29	8 17	50 26	8 28	51 24	8 39	52 21	8 49	53 19	8 59	54 16	9 10	55 14	9 34	50	0
52	48 31	8 8	49 29	8 18	50 26	8 29	51 24	8 39	52 21	8 50	53 19	9 0	54 16	9 11	55 13	9 36	52	0
54	48 31	8 9	49 29	8 19	50 26	8 30	51 24	8 40	52 21	8 51	53 18	9 2	54 16	9 12	55 13	9 38	54	0
56	48 31	8 10	49 29	8 20	50 26	8 31	51 23	8 42	52 21	8 52	53 18	9 3	54 16	9 13	55 13	9 40	56	0
58	48 31	8 11	49 28	8 21	50 26	8 32	51 23	8 43	52 20	8 53	53 18	9 4	54 16	9 14	55 13	9 42	58	0
17°																		
0'	48 31	8 12	49 28	8 22	50 26	8 33	51 23	8 44	52 20	8 54	53 18	9 5	54 16	9 16	55 12	9 26	1	0
2	48 31	8 13	49 28	8 24	50 25	8 34	51 23	8 45	52 20	8 55	53 17	9 6	54 15	9 17	55 12	9 28	2	0
4	48 30	8 14	49 28	8 25	50 25	8 35	51 23	8 46	52 20	8 57	53 17	9 7	54 15	9 18	55 12	9 30	4	0
6	48 30	8 15	49 28	8 26	50 25	8 36	51 22	8 47	52 20	8 58	53 17	9 8	54 14	9 19	55 12	9 32	6	0
8	48 30	8 16	49 27	8 27	50 25	8 37	51 22	8 48	52 19	8 59	53 17	9 10	54 14	9 20	55 11	9 34	8	0
10	48 30	8 17	49 27	8 28	50 25	8 38	51 22	8 49	52 19	9 0	53 17	9 11	54 14	9 21	55 11	9 36	10	0
12	48 30	8 18	49 27	8 29	50 24	8 40	51 22	8 50	52 19	9 1	53 16	9 12	54 14	9 22	55 11	9 38	12	0
14	48 29	8 19	49 27	8 30	50 24	8 41	51 21	8 51	52 19	9 2	53 16	9 13	54 13	9 23	55 11	9 40	14	0
16	48 29	8 20	49 27	8 31	50 24	8 42	51 21	8 52	52 19	9 3	53 16	9 14	54 13	9 24	55 10	9 42	16	0
18	48 29	8 21	49 26	8 32	50 24	8 43	51 21	8 53	52 18	9 4	53 16	9 15	54 13	9 25	55 10	9 44	18	0
20	48 29	8 22	49 26	8 33	50 23	8 44	51 21	8 54	52 18	9 5	53 15	9 16	54 13	9 26	55 10	9 46	20	0
22	48 29	8 23	49 26	8 34	50 23	8 45	51 21	8 55	52 18	9 6	53 15	9 17	54 12	9 27	55 10	9 48	22	0
24	48 28	8 24	49 26	8 35	50 23	8 46	51 20	8 57	52 18	9 8	53 15	9 19	54 12	9 29	55 9	9 50	24	0
26	48 28	8 25	49 26	8 36	50 23	8 47	51 20	8 58	52 17	9 9	53 15	9 20	54 12	9 31	55 9	9 52	26	0
28	48 28	8 26	49 25	8 37	50 23	8 48	51 20	8 59	52 17	9 10	53 14	9 21	54 12	9 32	55 9	9 54	28	0
30	48 28	8 27	49 25	8 38	50 22	8 49	51 20	9 0	52 17	9 11	53 14	9 22	54 11	9 33	55 8	9 56	30	0
32	48 28	8 28	49 25	8 39	50 22	8 50	51 19	9 1	52 17	9 12	53 14	9 23	54 11	9 34	55 8	9 58	32	0
34	48 27	8 30	49 25	8 40	50 22	8 51	51 19	9 2	52 16	9 13	53 14	9 24	54 11	9 35	55 8	9 60	34	0
36	48 27	8 31	49 25	8 41	50 22	8 52	51 19	9 3	52 16	9 14	53 13	9 25	54 11	9 36	55 8	9 47	36	0
38	48 27	8 32	49 24	8 43	50 22	8 54	51 19	9 5	52 16	9 15	53 13	9 26	54 10	9 37	55 8	9 48	38	0
40	48 27	8 33	49 24	8 44	50 21	8 55	51 18	9 6	52 16	9 17	53 13	9 28	54 10	9 39	55 7	9 50	40	0
42	48 27	8 34	49 24	8 45	50 21	8 56	51 18	9 7	52 15	9 18	53 13	9 29	54 10	9 40	55 7	9 51	42	0
44	48 26	8 35	49 24	8 46	50 21	8 57	51 18	9 8	52 15	9 19	53 12	9 30	54 9	9 41	55 7	9 52	44	0
46	48 26	8 36	49 23	8 47	50 21	8 58	51 18	9 9	52 15	9 20	53 12	9 31	54 9	9 42	55 6	9 53	46	0
48	48 26	8 37	49 23	8 48	50 20	8 59	51 17	9 10	52 15	9 21	53 12	9 32	54 9	9 43	55 6	9 54	48	0
50	48 26	8 38	49 23	8 49	50 20	9 0	51 17	9 11	52 14	9 22	53 11	9 33	54 8	9 44	55 6	9 55	50	0
52	48 26	8 39	49 23	8 50	50 20	9 1	51 17	9 12	52 14	9 23	53 11	9 34	54 8	9 45	55 5	9 57	52	0
54	48 25	8 40	49 22	8 51	50 20	9 2	51 17	9 13	52 14	9 24	53 11	9 35	54 8	9 47	55 5	9 59	54	0
56	48 25	8 41	49 22	8 52	50 19	9 3	51 16	9 14	52 13	9 25	53 11	9 37	54 8	9 48	55 5	9 60	56	0
58	48 25	8 42	49 22	8 53	50 19	9 4	51 16	9 15	52 13	9 26	53 10	9 38	54 7	9 49	55 4	9 61	58	0

(18° and 19°) The Correction of the Moon's Altitude, and the Aux. Angle A																	(w.)	
App Alt.	Minutes of Moon's Hor. Parallax.																Seconds of H. P.	
	54'		55'		56'		57'		58'		59'		60'		61'		Cor.	A
18	Corr. +	A 60"	Corr. +	A 60"	Corr. +	A 60"	Corr. +	A 60"	Corr. +	A 60"	Corr. +	A 60"	Corr. +	A 60"	Corr. +	A 60"	1	0
0	48 25	8 43	49 22	8 54	50 19	9 5	51 16	9 16	52 13	9 28	53 10	9 39	54 7	9 50	55 4	10 1	1	0
2	48 24	8 44	49 22	8 55	50 19	9 6	51 16	9 16	52 13	9 29	53 10	9 40	54 7	9 51	55 4	10 2	2	0
4	48 24	8 45	49 21	8 56	50 18	9 7	51 15	9 17	52 12	9 30	53 9	9 41	54 0	9 52	55 3	10 4	4	0
6	48 24	8 46	49 21	8 57	50 18	9 8	51 15	9 20	52 12	9 31	53 9	9 42	54 0	9 53	55 3	10 5	6	0
8	48 24	8 47	49 21	8 58	50 18	9 10	51 15	9 21	52 12	9 32	53 8	9 43	54 0	9 54	55 3	10 6	8	0
10	48 23	8 48	49 20	8 59	50 17	9 11	51 14	9 22	52 11	9 33	53 8	9 44	54 0	9 55	55 3	10 7	10	0
12	48 23	8 49	49 20	9 0	50 17	9 12	51 14	9 23	52 11	9 34	53 8	9 45	54 0	9 56	55 2	10 8	12	0
14	48 23	8 50	49 20	9 1	50 17	9 13	51 14	9 24	52 11	9 35	53 8	9 47	54 0	9 58	55 2	10 9	14	0
16	48 23	8 51	49 20	9 2	50 17	9 14	51 14	9 25	52 11	9 36	53 8	9 48	54 0	9 59	55 2	10 10	16	0
18	48 22	8 52	49 19	9 4	50 16	9 15	51 13	9 26	52 10	9 38	53 7	9 49	54 0	1 0	55 1	10 12	18	0
20	48 22	8 53	49 19	9 5	50 16	9 16	51 13	9 27	52 10	9 39	53 7	9 50	54 0	1 1	55 1	10 13	20	0
22	48 22	8 54	49 19	9 6	50 16	9 17	51 13	9 28	52 10	9 40	53 7	9 51	54 0	1 2	55 1	10 14	22	0
24	48 22	8 55	49 19	9 7	50 15	9 18	51 12	9 29	52 9	9 41	53 6	9 52	54 0	1 3	55 0	10 15	24	0
26	48 21	8 56	49 18	9 8	50 15	9 19	51 12	9 31	52 9	9 42	53 6	9 53	54 0	1 4	55 0	10 16	26	0
28	48 21	8 57	49 18	9 9	50 15	9 20	51 12	9 32	52 9	9 43	53 6	9 54	54 0	1 5	55 0	10 17	28	0
30	48 21	8 58	49 18	9 10	50 15	9 21	51 12	9 33	52 8	9 44	53 5	9 55	54 0	1 6	55 0	10 18	30	0
32	48 20	8 59	49 17	9 11	50 14	9 22	51 11	9 34	52 8	9 45	53 5	9 56	54 0	1 7	55 0	10 19	32	0
34	48 20	9 0	49 17	9 12	50 14	9 23	51 11	9 35	52 8	9 46	53 5	9 57	54 0	1 8	55 0	10 20	34	0
36	48 20	9 1	49 17	9 13	50 14	9 24	51 11	9 36	52 7	9 47	53 4	9 59	54 0	1 9	55 0	10 21	36	0
38	48 20	9 2	49 17	9 14	50 13	9 25	51 10	9 37	52 7	9 48	53 4	1 0	54 0	1 10	55 0	10 22	38	0
40	48 19	9 3	49 16	9 15	50 13	9 27	51 10	9 38	52 7	9 50	53 4	1 1	54 0	1 11	55 0	10 23	40	0
42	48 19	9 5	49 16	9 16	50 13	9 28	51 10	9 39	52 6	9 51	53 3	1 2	54 0	1 12	55 0	10 24	42	0
44	48 19	9 6	49 16	9 17	50 13	9 29	51 9	9 40	52 6	9 52	53 3	1 3	54 0	1 13	55 0	10 25	44	0
46	48 19	9 7	49 15	9 18	50 12	9 30	51 9	9 41	52 6	9 53	53 3	1 4	54 0	1 14	55 0	10 26	46	0
48	48 19	9 8	49 15	9 19	50 12	9 31	51 9	9 43	52 6	9 54	53 2	1 5	54 0	1 15	55 0	10 27	48	0
50	48 18	9 9	49 15	9 20	50 12	9 32	51 8	9 44	52 5	9 55	53 2	1 6	54 0	1 16	55 0	10 28	50	0
52	48 18	9 10	49 15	9 21	50 11	9 33	51 8	9 45	52 5	9 56	53 2	1 7	54 0	1 17	55 0	10 29	52	0
54	48 18	9 11	49 14	9 22	50 11	9 34	51 8	9 46	52 5	9 57	53 1	1 8	53 58	10 21	54 55	10 33	54	0
56	48 17	9 12	49 14	9 23	50 11	9 35	51 7	9 47	52 4	9 58	53 1	1 9	53 58	10 22	54 55	10 34	56	0
58	48 17	9 13	49 14	9 25	50 10	9 36	51 7	9 48	52 4	1 0	53 1	1 10	53 57	10 23	54 54	10 35	58	0
19	54'		55'		56'		57'		58'		59'		60'		61'		Cor.	A
0	48 17	9 14	49 13	9 26	50 10	9 37	51 7	9 49	52 4	1 1	53 0	1 10	53 57	10 24	54 54	10 36	40	38
2	48 16	9 15	49 13	9 27	50 10	9 38	51 7	9 50	52 3	1 2	53 0	1 11	53 57	10 25	54 54	10 37	42	38
4	48 16	9 16	49 13	9 28	50 9	9 39	51 6	9 51	52 3	1 3	53 0	1 12	53 56	10 27	54 53	10 38	44	38
6	48 16	9 17	49 12	9 29	50 9	9 40	51 6	9 52	52 2	1 4	53 0	1 13	53 56	10 28	54 53	10 40	46	38
8	48 15	9 18	49 12	9 30	50 9	9 42	51 5	9 53	52 2	1 5	53 0	1 14	53 56	10 29	54 52	10 41	48	38
10	48 15	9 19	49 12	9 31	50 8	9 43	51 5	9 54	52 2	1 6	53 0	1 15	53 55	10 30	54 52	10 42	50	38
12	48 15	9 20	49 11	9 32	50 8	9 44	51 5	9 55	52 1	1 7	53 0	1 16	53 55	10 31	54 51	10 43	52	38
14	48 14	9 21	49 11	9 33	50 8	9 45	51 4	9 56	52 1	1 8	53 0	1 17	53 54	10 32	54 51	10 44	54	38
16	48 14	9 22	49 11	9 34	50 7	9 46	51 4	9 57	52 1	1 9	53 0	1 18	53 54	10 33	54 51	10 45	56	38
18	48 14	9 23	49 10	9 35	50 7	9 47	51 4	9 58	52 0	1 10	53 0	1 19	53 54	10 34	54 50	10 46	58	38
20	48 13	9 24	49 10	9 36	50 7	9 48	51 3	1 0	53 0	1 11	53 0	1 20	53 53	10 35	54 50	10 47	60	38
22	48 13	9 25	49 10	9 37	50 6	9 49	51 3	1 1	53 0	1 12	53 0	1 21	53 53	10 36	54 49	10 48	62	38
24	48 13	9 26	49 9	9 38	50 6	9 50	51 3	1 2	53 0	1 13	53 0	1 22	53 53	10 37	54 49	10 49	64	38
26	48 12	9 27	49 9	9 39	50 6	9 51	51 2	1 3	53 0	1 14	53 0	1 23	53 52	10 39	54 49	10 51	66	38
28	48 12	9 28	49 9	9 40	50 5	9 52	51 2	1 4	53 0	1 15	53 0	1 24	53 52	10 40	54 48	10 52	68	38
30	48 12	9 29	49 8	9 41	50 5	9 53	51 1	1 5	53 0	1 16	53 0	1 25	53 51	10 41	54 48	10 53	70	38
32	48 11	9 30	49 8	9 42	50 5	9 54	51 1	1 6	53 0	1 17	53 0	1 26	53 51	10 42	54 47	10 54	72	38
34	48 11	9 31	49 8	9 43	50 4	9 55	51 1	1 7	53 0	1 18	53 0	1 27	53 50	10 43	54 47	10 55	74	38
36	48 11	9 32	49 7	9 44	50 4	9 56	51 0	1 8	53 0	1 19	53 0	1 28	53 50	10 44	54 47	10 56	76	38
38	48 11	9 33	49 7	9 45	50 4	9 57	51 0	1 9	53 0	1 20	53 0	1 29	53 50	10 45	54 46	10 57	78	38
40	48 10	9 34	49 7	9 46	50 3	9 58	51 0	1 10	53 0	1 21	53 0	1 30	53 49	10 46	54 46	10 58	80	38
42	48 10	9 35	49 6	9 47	50 3	1 0	53 0	1 22	53 0	1 22	53 0	1 31	53 49	10 47	54 45	10 59	82	38
44	48 10	9 36	49 6	9 48	50 2	1 1	53 0	1 23	53 0	1 23	53 0	1 32	53 48	10 48	54 45	10 60	84	38
46	48 9	9 37	49 6	9 49	50 2	1 2	53 0	1 24	53 0	1 24	53 0	1 33	53 48	10 50	54 45	10 61	86	38
48	48 9	9 38	49 5	9 50	50 2	1 3	53 0	1 25	53 0	1 25	53 0	1 34	53 48	10 51	54 44	10 62	88	38
50	48 8	9 39	49 5	9 51	50 1	1 4	53 0	1 26	53 0	1 26	53 0	1 35	53 47	10 52	54 44	10 63	90	38
52	48 8	9 40	49 5	9 52	50 1	1 5	53 0	1 27	53 0	1 27	53 0	1 36	53 47	10 53	54 44	10 64	92	38
54	48 8	9 41	49 4	9 53	50 1	1 6	53 0	1 28	53 0	1 28	53 0	1 37	53 47	10 54	54 44	10 65	94	38
56	48 7	9 42	49 4	9 54	50 0	1 7	53 0	1 29	53 0	1 29	53 0	1 38	53 47	10 55	54 44	10 66	96	38
58	48 7	9 43	49 4	9 55	50 0	1 8	53 0	1 30	53 0	1 30	53 0	1 39	53 47	10 56	54 44	10 67	98	38

(w.) The Correction of the Moon's Altitude, and the Aux. Angle A. (20° and 21°)																			
App Alt.		Minutes of Moon's Hor. Parallax.																Records of R. P.	
		54'		55'		56'		57'		58'		59'		60'		61'			
20°		Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°		
0'	48 7	9 44	49 3	9 57	50 0	10 9	50 56	10 21	51 52	10 34	52 49	10 46	53 45	10 58	54 42	11 11	1	1	1
2	48 8	9 45	49 3	9 58	49 59	10 10	50 56	10 22	51 52	10 35	52 48	10 47	53 45	11 0	54 41	11 12	2	2	2
4	48 9	9 46	49 2	9 59	49 59	10 11	50 55	10 23	51 52	10 36	52 48	10 48	53 44	11 1	54 41	11 13	3	3	3
6	48 9	9 47	49 2	10 0	49 58	10 12	50 55	10 25	51 51	10 37	52 47	10 49	53 44	11 2	54 40	11 14	4	4	4
8	48 8	9 48	49 2	10 1	49 58	10 13	50 54	10 26	51 51	10 38	52 47	10 50	53 43	11 3	54 40	11 15	5	5	5
10	48 8	9 49	49 1	10 2	49 58	10 14	50 54	10 27	51 50	10 39	52 47	10 52	53 43	11 4	54 39	11 16	6	6	6
12	48 8	9 51	49 1	10 3	49 57	10 15	50 54	10 28	51 50	10 40	52 46	10 53	53 42	11 5	54 39	11 17	7	7	7
14	48 8	9 52	49 0	10 4	49 57	10 16	50 53	10 29	51 49	10 41	52 46	10 54	53 42	11 6	54 38	11 18	8	8	8
16	48 8	9 53	49 0	10 5	49 56	10 17	50 53	10 30	51 49	10 42	52 45	10 55	53 42	11 7	54 38	11 19	9	9	9
18	48 8	9 54	49 0	10 6	49 56	10 18	50 52	10 31	51 49	10 44	52 45	10 56	53 41	11 8	54 37	11 20	10	10	10
20	48 8	9 55	48 59	10 7	49 56	10 20	50 52	10 32	51 48	10 45	52 44	10 57	53 41	11 9	54 37	11 21	11	11	11
22	48 8	9 56	48 59	10 8	49 55	10 21	50 51	10 33	51 48	10 46	52 44	10 58	53 40	11 10	54 37	11 22	12	12	12
24	48 8	9 57	48 58	10 9	49 55	10 22	50 51	10 34	51 47	10 47	52 44	10 59	53 40	11 11	54 36	11 23	13	13	13
26	48 8	9 58	48 58	10 10	49 54	10 23	50 51	10 35	51 47	10 48	52 43	11 0	53 39	11 12	54 36	11 24	14	14	14
28	48 8	9 59	48 58	10 11	49 54	10 24	50 50	10 36	51 46	10 49	52 43	11 1	53 39	11 13	54 35	11 25	15	15	15
30	48 8	10 0	48 57	10 12	49 54	10 25	50 50	10 37	51 46	10 50	52 42	11 2	53 38	11 14	54 35	11 26	16	16	16
32	48 8	10 1	48 57	10 13	49 53	10 26	50 49	10 38	51 46	10 51	52 42	11 3	53 38	11 15	54 34	11 27	17	17	17
34	48 8	10 2	48 56	10 14	49 53	10 27	50 49	10 40	51 45	10 52	52 41	11 4	53 37	11 16	54 34	11 28	18	18	18
36	48 8	10 3	48 56	10 15	49 52	10 28	50 48	10 41	51 45	10 53	52 41	11 5	53 37	11 17	54 33	11 29	19	19	19
38	47 59	10 4	48 56	10 16	49 52	10 29	50 48	10 42	51 44	10 54	52 40	11 6	53 37	11 18	54 33	11 30	20	20	20
40	47 59	10 5	48 56	10 17	49 51	10 30	50 48	10 43	51 44	10 55	52 40	11 7	53 36	11 19	54 32	11 31	21	21	21
42	47 59	10 6	48 55	10 18	49 51	10 31	50 47	10 44	51 43	10 57	52 40	11 8	53 36	11 20	54 32	11 32	22	22	22
44	47 59	10 7	48 54	10 19	49 51	10 32	50 47	10 45	51 43	10 58	52 39	11 9	53 35	11 21	54 31	11 33	23	23	23
46	47 58	10 8	48 54	10 20	49 50	10 33	50 46	10 46	51 42	10 59	52 39	11 10	53 35	11 22	54 31	11 34	24	24	24
48	47 58	10 9	48 54	10 22	49 50	10 34	50 46	10 47	51 42	11 0	52 38	11 11	53 34	11 23	54 30	11 35	25	25	25
50	47 57	10 10	48 53	10 23	49 49	10 35	50 45	10 48	51 42	11 1	52 38	11 12	53 34	11 24	54 30	11 36	26	26	26
52	47 57	10 11	48 53	10 24	49 49	10 36	50 45	10 49	51 41	11 2	52 37	11 13	53 33	11 25	54 29	11 37	27	27	27
54	47 56	10 12	48 52	10 25	49 49	10 37	50 45	10 50	51 41	11 3	52 37	11 14	53 33	11 26	54 29	11 38	28	28	28
56	47 56	10 13	48 52	10 26	49 48	10 38	50 44	10 51	51 40	11 4	52 36	11 15	53 32	11 27	54 28	11 39	29	29	29
58	47 56	10 14	48 52	10 27	49 48	10 40	50 44	10 52	51 40	11 5	52 36	11 16	53 32	11 28	54 28	11 40	30	30	30
21°																			
0'	47 55	10 15	48 51	10 28	49 47	10 41	50 43	10 53	51 39	11 6	52 35	11 17	53 31	11 29	54 27	11 41	31	31	31
2	47 55	10 16	48 51	10 29	49 47	10 42	50 43	10 55	51 39	11 7	52 35	11 18	53 31	11 30	54 27	11 42	32	32	32
4	47 54	10 17	48 50	10 30	49 48	10 43	50 42	10 56	51 39	11 8	52 34	11 19	53 30	11 31	54 26	11 43	33	33	33
6	47 54	10 18	48 50	10 31	49 46	10 44	50 42	10 57	51 38	11 9	52 34	11 20	53 30	11 32	54 26	11 44	34	34	34
8	47 53	10 19	48 49	10 32	49 46	10 45	50 41	10 58	51 37	11 10	52 33	11 21	53 29	11 33	54 25	11 45	35	35	35
10	47 53	10 20	48 49	10 33	49 45	10 46	50 41	10 59	51 37	11 11	52 33	11 22	53 29	11 34	54 25	11 46	36	36	36
12	47 52	10 21	48 48	10 34	49 44	10 47	50 40	11 0	51 36	11 12	52 32	11 23	53 28	11 35	54 24	11 47	37	37	37
14	47 52	10 22	48 48	10 35	49 44	10 48	50 40	11 1	51 36	11 13	52 32	11 24	53 28	11 36	54 24	11 48	38	38	38
16	47 52	10 23	48 48	10 36	49 43	10 49	50 39	11 2	51 35	11 14	52 31	11 25	53 27	11 37	54 23	11 49	39	39	39
18	47 51	10 24	48 47	10 37	49 43	10 50	50 39	11 3	51 35	11 15	52 31	11 26	53 27	11 38	54 23	11 50	40	40	40
20	47 51	10 25	48 47	10 38	49 43	10 51	50 38	11 4	51 34	11 16	52 30	11 27	53 26	11 39	54 22	11 51	41	41	41
22	47 50	10 26	48 46	10 39	49 42	10 52	50 38	11 5	51 34	11 17	52 30	11 28	53 26	11 40	54 22	11 52	42	42	42
24	47 50	10 27	48 46	10 40	49 42	10 53	50 37	11 6	51 33	11 18	52 29	11 29	53 25	11 41	54 21	11 53	43	43	43
26	47 49	10 28	48 45	10 41	49 41	10 54	50 37	11 7	51 33	11 19	52 29	11 30	53 25	11 42	54 21	11 54	44	44	44
28	47 49	10 29	48 45	10 42	49 41	10 55	50 37	11 8	51 32	11 20	52 28	11 31	53 24	11 43	54 20	11 55	45	45	45
30	47 48	10 30	48 44	10 43	49 40	10 56	50 36	11 9	51 32	11 21	52 28	11 32	53 24	11 44	54 19	11 56	46	46	46
32	47 48	10 31	48 44	10 44	49 40	10 57	50 36	11 10	51 31	11 22	52 27	11 33	53 23	11 45	54 19	11 57	47	47	47
34	47 48	10 32	48 44	10 45	49 39	10 58	50 36	11 11	51 31	11 23	52 27	11 34	53 23	11 46	54 18	11 58	48	48	48
36	47 47	10 33	48 43	10 46	49 39	10 59	50 35	11 12	51 30	11 24	52 26	11 35	53 22	11 47	54 18	11 59	49	49	49
38	47 47	10 34	48 43	10 47	49 38	11 0	50 34	11 13	51 30	11 25	52 26	11 36	53 22	11 48	54 17	12 0	50	50	50
40	47 46	10 35	48 42	10 48	49 38	11 1	50 34	11 14	51 29	11 26	52 25	11 37	53 21	11 49	54 17	12 1	51	51	51
42	47 46	10 36	48 42	10 49	49 37	11 2	50 33	11 15	51 29	11 27	52 25	11 38	53 21	11 50	54 16	12 2	52	52	52
44	47 45	10 37	48 41	10 50	49 37	11 3	50 33	11 16	51 28	11 28	52 24	11 39	53 20	11 51	54 16	12 3	53	53	53
46	47 45	10 38	48 41	10 51	49 36	11 4	50 32	11 17	51 28	11 29	52 24	11 40	53 20	11 52	54 15	12 4	54	54	54
48	47 45	10 39	48 40	10 52	49 36	11 5	50 32	11 18	51 27	11 30	52 23	11 41	53 19	11 53	54 15	12 5	55	55	55
50	47 44	10 40	48 40	10 53	49 35	11 6	50 31	11 19	51 27	11 31	52 23	11 42	53 18	11 54	54 14	13 0	56	56	56
52	47 44	10 41	48 39	10 54	49 35	11 7	50 31	11 20	51 26	11 32	52 2								

(22° and 23°) The Correction of the Moon's Altitude, and the Aux. Angle A.																	(w.)	
App. Alt.	Minutes of Moon's Hor. Parallax.																Seconds of H. P.	
	54'		55'		56'		57'		58'		59'		60'		61'		"	A
	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°		
22°																		
0	47 42	10 45	48 37	10 58	49 33	11 12	50 29	11 25	51 24	11 30	52 20	11 52	53 16	12 6	54 11	12 19	1	0
2	47 41	10 46	48 37	11 09	49 32	11 13	50 28	11 26	51 24	11 40	52 19	11 53	53 15	12 7	54 11	12 20	2	1
4	47 41	10 47	48 36	11 19	49 32	11 14	50 28	11 27	51 23	11 41	52 19	11 54	53 14	12 8	54 10	12 21	3	1
6	47 40	10 48	48 36	11 29	49 31	11 15	50 27	11 29	51 23	11 42	52 18	11 55	53 14	12 9	54 10	12 22	4	1
8	47 40	10 49	48 35	11 39	49 31	11 16	50 27	11 30	51 22	11 43	52 18	11 57	53 13	12 10	54 9	12 24	5	1
10	47 39	10 50	48 35	11 49	49 30	11 17	50 26	11 31	51 22	11 44	52 17	11 58	53 13	12 11	54 8	12 25	6	1
12	47 39	10 51	48 34	11 59	49 30	11 18	50 26	11 32	51 21	11 45	52 17	11 59	53 12	12 12	54 8	12 26	7	1
14	47 38	10 52	48 34	12 09	49 29	11 19	50 25	11 33	51 21	11 46	52 16	12 0	53 12	12 13	54 7	12 27	8	1
16	47 38	10 53	48 33	12 19	49 29	11 20	50 24	11 34	51 20	11 47	52 16	12 1	53 11	12 14	54 7	12 28	9	1
18	47 37	10 54	48 33	12 29	49 28	11 21	50 24	11 35	51 20	11 49	52 15	12 2	53 11	12 15	54 6	12 29	10	1
20	47 37	10 55	48 32	12 39	49 28	11 22	50 23	11 36	51 19	11 50	52 14	12 3	53 10	12 17	54 5	12 30	11	1
22	47 36	10 56	48 32	12 49	49 27	11 23	50 23	11 37	51 18	11 51	52 14	12 4	53 9	12 18	54 5	12 32	12	1
24	47 36	10 57	48 31	12 59	49 27	11 24	50 22	11 38	51 18	11 52	52 13	12 5	53 8	12 19	54 4	12 33	13	1
26	47 35	10 58	48 31	13 09	49 26	11 25	50 22	11 39	51 17	11 53	52 13	12 6	53 8	12 20	54 4	12 34	14	1
28	47 35	10 59	48 30	13 19	49 26	11 26	50 21	11 40	51 17	11 54	52 12	12 7	53 8	12 21	54 3	12 35	15	1
30	47 34	11 00	48 30	13 29	49 25	11 27	50 21	11 41	51 16	11 55	52 12	12 8	53 7	12 22	54 3	12 36	16	1
32	47 34	11 01	48 29	13 39	49 25	11 28	50 20	11 42	51 16	11 56	52 11	12 9	53 7	12 23	54 2	12 37	17	1
34	47 33	11 02	48 29	13 49	49 24	11 30	50 20	11 43	51 16	11 57	52 11	12 10	53 6	12 24	54 2	12 38	18	1
36	47 33	11 03	48 28	13 59	49 24	11 31	50 19	11 44	51 15	11 58	52 10	12 11	53 5	12 25	54 1	12 39	19	1
38	47 32	11 04	48 28	14 09	49 23	11 32	50 19	11 45	51 14	11 59	52 9	12 12	53 5	12 26	54 1	12 40	20	1
40	47 32	11 05	48 27	14 19	49 23	11 33	50 18	11 46	51 13	12 00	52 9	12 13	53 4	12 27	54 0	12 42	21	1
42	47 31	11 06	48 27	14 29	49 22	11 34	50 17	11 47	51 13	12 01	52 8	12 14	53 3	12 28	53 59	12 43	22	1
44	47 31	11 07	48 26	14 39	49 22	11 35	50 17	11 48	51 12	12 02	52 8	12 15	53 3	12 29	53 58	12 44	23	1
46	47 30	11 08	48 26	14 49	49 21	11 36	50 16	11 49	51 12	12 03	52 7	12 16	53 2	12 30	53 58	12 45	24	1
48	47 30	11 09	48 25	14 59	49 20	11 37	50 16	11 51	51 11	12 04	52 6	12 17	53 2	12 31	53 57	12 46	25	1
50	47 29	11 10	48 25	15 09	49 20	11 38	50 15	11 52	51 11	12 05	52 5	12 18	53 1	12 32	53 57	12 47	26	1
52	47 29	11 11	48 24	15 19	49 19	11 39	50 15	11 53	51 10	12 06	52 5	12 19	53 1	12 33	53 56	12 48	27	1
54	47 28	11 12	48 24	15 29	49 19	11 40	50 14	11 54	51 9	12 07	52 4	12 20	53 0	12 34	53 55	12 49	28	1
56	47 28	11 13	48 23	15 39	49 18	11 41	50 14	11 55	51 9	12 08	52 4	12 21	53 0	12 35	53 55	12 50	29	1
58	47 27	11 14	48 23	15 49	49 18	11 42	50 13	11 56	51 8	12 09	52 4	12 22	53 0	12 36	53 54	12 52	30	1
23°																		
0	47 27	11 15	48 22	15 59	49 17	11 43	50 12	11 57	51 8	12 11	52 3	12 23	52 58	12 37	53 53	12 53	31	1
2	47 26	11 16	48 21	16 09	49 17	11 44	50 12	11 58	51 7	12 12	52 2	12 24	52 58	12 38	53 53	12 54	32	1
4	47 26	11 17	48 21	16 19	49 16	11 45	50 11	11 59	51 7	12 13	52 2	12 25	52 57	12 39	53 52	12 55	33	1
6	47 25	11 18	48 20	16 29	49 16	11 46	50 11	12 00	51 6	12 14	52 1	12 26	52 56	12 40	53 52	12 56	34	1
8	47 25	11 19	48 20	16 39	49 15	11 47	50 10	12 01	51 5	12 15	52 1	12 27	52 56	12 41	53 51	12 57	35	1
10	47 24	11 20	48 19	16 49	49 14	11 48	50 10	12 02	51 4	12 16	52 0	12 28	52 55	12 42	53 50	12 58	36	1
12	47 24	11 21	48 19	16 59	49 14	11 49	50 9	12 03	51 3	12 17	51 59	12 29	52 55	12 43	53 50	13 0	37	1
14	47 23	11 22	48 18	17 09	49 13	11 50	50 9	12 04	51 2	12 18	51 59	12 30	52 54	12 44	53 49	13 1	38	1
16	47 23	11 23	48 18	17 19	49 13	11 51	50 8	12 05	51 1	12 19	51 58	12 31	52 53	12 45	53 49	13 2	39	1
18	47 22	11 24	48 17	17 29	49 12	11 52	50 8	12 06	51 0	12 20	51 58	12 32	52 53	12 46	53 48	13 3	40	1
20	47 21	11 25	48 17	17 39	49 12	11 53	50 7	12 07	51 0	12 21	51 57	12 33	52 52	12 47	53 48	13 4	41	1
22	47 21	11 26	48 16	17 49	49 11	11 54	50 6	12 08	51 0	12 22	51 56	12 34	52 52	12 48	53 47	13 5	42	1
24	47 20	11 27	48 15	17 59	49 11	11 55	50 5	12 09	51 0	12 23	51 56	12 35	52 51	12 49	53 47	13 6	43	1
26	47 20	11 28	48 15	18 09	49 10	11 56	50 5	12 10	51 0	12 24	51 55	12 36	52 50	12 50	53 46	13 7	44	1
28	47 19	11 29	48 14	18 19	49 9	11 57	50 4	12 11	51 0	12 25	51 55	12 37	52 50	12 51	53 45	13 8	45	1
30	47 19	11 30	48 14	18 29	49 9	11 58	50 4	12 12	51 0	12 26	51 54	12 38	52 49	12 52	53 44	13 9	46	1
32	47 18	11 31	48 13	18 39	49 8	11 59	50 3	12 13	51 0	12 27	51 53	12 39	52 48	12 53	53 44	13 10	47	1
34	47 18	11 32	48 13	18 49	49 8	12 00	50 3	12 14	51 0	12 28	51 53	12 40	52 48	12 54	53 43	13 11	48	1
36	47 17	11 33	48 12	18 59	49 7	12 01	50 2	12 15	51 0	12 29	51 52	12 41	52 47	12 55	53 43	13 12	49	1
38	47 17	11 34	48 12	19 09	49 7	12 02	50 2	12 16	51 0	12 30	51 52	12 42	52 47	12 56	53 42	13 13	50	1
40	47 16	11 35	48 11	19 19	49 6	12 03	50 1	12 17	51 0	12 31	51 51	12 43	52 46	12 57	53 41	13 14	51	1
42	47 16	11 36	48 11	19 29	49 6	12 04	50 1	12 18	51 0	12 32	51 50	12 44	52 45	12 58	53 41	13 15	52	1
44	47 15	11 37	48 10	19 39	49 5	12 05	50 0	12 19	51 0	12 33	51 50	12 45	52 45	12 59	53 40	13 16	53	1
46	47 14	11 38	48 9	19 49	49 4	12 06	50 0	12 20	51 0	12 34	51 49	12 46	52 44	13 0	53 40	13 17	54	1
48	47 14	11 39	48 9	19 59	49 4	12 07	50 0	12 21	51 0	12 35	51 48	12 47	52 43	13 1	53 39	13 18	55	1
50	47 13	11 40	48 8	20 09	49 3	12 08	50 0	12 22	51 0	12 36	51 48	12 48	52 43	13 2	53 38	13 19	56	1
52	47 13	11 41	48 8	20 19	49 3	12 09	50 0	12 23	51 0	12 37	51 47	12 49	52 42	13 3	53 37	13 20	57	1
54	47 12	11 42	48 7	20 29	49 2	12 10	50 0	12 24	51 0	12 38	51 47	12 50	52 42	13 4	53 36	13 21	58	1
56	47 12	11 43	48 7	20 39	49 2	12 11	50 0	12 25	51 0	12 39	51 46	12 51	52 41	13 5	53 35	13 22	59	1
58	47 11	11 44	48 6	20 49	49 1	12 12	50 0	12 26	51 0	12 40	51 45	12 52	52 40	13 6	53 34	13 23	60	1

(w.)		The Correction of the Moon's Altitude, and the Aux. Angle A. (24° and 25°)																Seconds of H P	
App. Alt.	Minutes of Moon's Hor. Parallax.																C	A	
	54'	55'	56'	57'	58'	59'	60'	61'											
24°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°			
0	47 11	11 45 48	5 11 50	49 0	12 14	49 55	12 28	50 50	12 43	51 45	12 57	52 40	13 12	53 34	13 26	1	1	0	
2	47 10	11 46 48	5 12 0	49 0	12 13	49 54	12 29	50 49	12 44	51 44	12 58	52 39	13 13	53 34	13 28	2	2	1	
4	47 9	11 47 48	4 12 1	48 50	12 16	49 54	12 30	50 49	12 45	51 43	13 0	52 38	13 14	53 33	13 29	3	3	1	
6	47 9	11 48 48	4 12 2	48 58	12 17	49 53	12 31	50 48	12 46	51 43	13 1	52 38	13 15	53 32	13 30	4	4	1	
8	47 8	11 49 48	3 12 3	48 58	12 18	49 53	12 33	50 47	12 47	51 42	13 2	52 37	13 16	53 32	13 31	5	5	1	
10	47 8	11 50 48	2 12 4	48 57	12 19	49 52	12 34	50 47	12 48	51 41	13 3	52 36	13 17	53 31	13 32	6	6	1	
12	47 7	11 51 48	2 12 5	48 57	12 20	49 51	12 35	51 46	12 49	51 41	13 4	52 36	13 18	53 30	13 33	7	7	1	
14	47 7	11 52 48	1 12 6	48 56	12 21	49 51	12 36	50 45	12 50	51 40	13 5	52 35	13 19	53 30	13 34	8	8	1	
16	47 6	11 53 48	1 12 7	48 55	12 22	49 50	12 37	50 45	12 51	51 40	13 6	52 34	13 20	53 29	13 35	9	9	1	
18	47 5	11 54 48	0 12 8	48 55	12 23	49 50	12 38	50 44	12 52	51 39	13 7	52 34	13 21	53 28	13 36	10	10	1	
20	47 5	11 55 48	0 12 9	48 54	12 24	49 49	12 39	50 44	12 53	51 38	13 8	52 33	13 22	53 28	13 37	11	11	1	
22	47 4	11 56 47 50	12 10	48 54	12 25	49 48	12 40	50 43	12 54	51 38	13 9	52 32	13 23	53 27	13 38	12	12	1	
24	47 4	11 57 47 58	12 11	48 53	12 26	49 48	12 41	50 42	12 55	51 37	13 10	52 32	13 24	53 26	13 40	13	13	1	
26	47 3	11 58 47 58	12 12	48 52	12 27	49 47	12 42	50 42	12 56	51 36	13 11	52 31	13 25	53 26	13 41	14	14	1	
28	47 3	11 59 47 57	12 13	48 52	12 28	49 46	12 43	50 41	12 58	51 35	13 12	52 30	13 26	53 25	13 42	15	15	1	
30	47 2	12 0 47 57	12 14	48 51	12 29	49 46	12 44	50 40	12 59	51 35	13 13	52 30	13 27	53 24	13 43	16	16	1	
32	47 1	12 1 47 56	12 15	48 51	12 30	49 45	12 45	50 40	13 0	51 34	13 14	52 29	13 28	53 24	13 44	17	17	1	
34	47 1	12 2 47 55	12 16	48 50	12 31	49 44	12 46	50 39	13 1	51 34	13 15	52 28	13 31	53 23	13 45	18	18	1	
36	47 0	12 3 47 55	12 17	48 49	12 32	49 44	12 47	50 38	13 2	51 33	13 16	52 28	13 32	53 22	13 46	19	19	1	
38	47 0	12 4 47 54	12 18	48 49	12 33	49 43	12 48	50 38	13 3	51 32	13 17	52 27	13 33	53 21	13 47	20	20	1	
40	46 59	12 4 47 53	12 19	48 48	12 34	49 43	12 49	50 37	13 4	51 32	13 18	52 26	13 34	53 21	13 49	21	21	1	
42	46 58	12 5 47 53	12 20	48 47	12 35	49 42	12 50	50 37	13 5	51 31	13 19	52 26	13 35	53 20	13 50	22	22	1	
44	46 58	12 6 47 52	12 21	48 47	12 36	49 41	12 51	50 36	13 6	51 31	13 20	52 25	13 36	53 19	13 51	23	23	1	
46	46 57	12 7 47 52	12 22	48 46	12 37	49 41	12 52	50 35	13 7	51 30	13 21	52 24	13 37	53 19	13 52	24	24	1	
48	46 57	12 8 47 51	12 23	48 46	12 38	49 40	12 53	50 35	13 8	51 30	13 22	52 24	13 38	53 18	13 53	25	25	1	
50	46 56	12 9 47 50	12 24	48 45	12 39	49 39	12 54	50 34	13 9	51 29	13 23	52 23	13 39	53 17	13 54	26	26	1	
52	46 55	12 10 47 50	12 25	48 44	12 40	49 39	12 55	50 33	13 10	51 28	13 24	52 22	13 40	53 17	13 55	27	27	1	
54	46 55	12 11 47 49	12 26	48 44	12 41	49 38	12 56	50 33	13 11	51 27	13 25	52 22	13 41	53 16	13 56	28	28	1	
56	46 54	12 12 47 48	12 27	48 43	12 42	49 38	12 57	50 32	13 12	51 26	13 26	52 21	13 43	53 16	13 57	29	29	1	
58	46 54	12 13 47 48	12 28	48 43	12 43	49 37	12 58	50 31	13 13	51 26	13 27	52 20	13 44	53 15	13 58	30	30	1	
25°	54'	55'	56'	57'	58'	59'	60'	61'											
0	46 53	12 14	47 47	12 29	48 42	12 44	49 36	13 50	50 31	13 13	51 25	13 30	52 19	13 43	53 14	14	0	1	
2	46 52	12 15	47 47	12 30	48 41	12 45	49 36	13 50	50 30	13 14	51 24	13 31	52 18	13 44	53 14	15	1	1	
4	46 52	12 16	47 46	12 31	48 41	12 46	49 35	13 50	50 29	13 15	51 24	13 32	52 18	13 45	53 14	16	2	1	
6	46 51	12 17	47 46	12 32	48 40	12 47	49 34	13 50	50 29	13 16	51 23	13 33	52 17	13 46	53 14	17	3	1	
8	46 51	12 18	47 45	12 33	48 39	12 48	49 34	13 50	50 28	13 17	51 22	13 34	52 17	13 47	53 14	18	4	1	
10	46 50	12 19	47 44	12 34	48 39	12 49	49 33	13 50	50 27	13 18	51 22	13 35	52 16	13 50	53 14	19	5	1	
12	46 49	12 20	47 44	12 35	48 38	12 50	49 32	13 50	50 27	13 19	51 21	13 36	52 15	13 51	53 14	20	6	1	
14	46 49	12 21	47 43	12 36	48 37	12 51	49 32	13 50	50 26	13 20	51 20	13 37	52 14	13 52	53 14	21	7	1	
16	46 48	12 22	47 42	12 37	48 37	12 52	49 31	13 50	50 25	13 21	51 19	13 38	52 14	13 53	53 14	22	8	1	
18	46 47	12 23	47 42	12 38	48 36	12 53	49 30	13 50	50 24	13 22	51 18	13 39	52 13	13 54	53 14	23	9	1	
20	46 47	12 24	47 41	12 39	48 35	12 54	49 30	13 50	50 24	13 23	51 18	13 40	52 12	13 55	53 14	24	10	1	
22	46 46	12 25	47 40	12 40	48 35	12 55	49 29	13 50	50 23	13 24	51 17	13 41	52 12	13 56	53 14	25	11	1	
24	46 46	12 26	47 40	12 41	48 34	12 56	49 28	13 50	50 22	13 25	51 17	13 42	52 11	13 58	53 14	26	12	1	
26	46 45	12 27	47 39	12 42	48 33	12 57	49 28	13 50	50 22	13 26	51 16	13 43	52 10	13 59	53 14	27	13	1	
28	46 44	12 28	47 38	12 43	48 33	12 58	49 27	13 50	50 21	13 27	51 15	13 44	52 9	14 0	53 14	28	14	1	
30	46 44	12 29	47 38	12 44	48 32	12 59	49 26	13 50	50 20	13 30	51 15	13 46	52 9	14 1	53 14	29	15	1	
32	46 43	12 30	47 37	12 45	48 31	13 0	49 26	13 50	50 20	13 31	51 14	13 47	52 8	14 2	53 14	30	16	1	
34	46 43	12 31	47 37	12 46	48 31	13 0	49 25	13 50	50 19	13 32	51 13	13 48	52 7	14 3	53 14	31	17	1	
36	46 42	12 32	47 36	12 47	48 30	13 0	49 24	13 50	50 18	13 33	51 12	13 49	52 6	14 4	53 14	32	18	1	
38	46 41	12 33	47 35	12 48	48 30	13 0	49 23	13 50	50 18	13 34	51 12	13 50	52 5	14 5	53 14	33	19	1	
40	46 40	12 34	47 35	12 49	48 29	13 0	49 23	13 50	50 17	13 35	51 11	13 51	52 4	14 6	53 14	34	20	1	
42	46 40	12 35	47 34	12 50	48 28	13 0	49 22	13 50	50 16	13 36	51 10	13 52	52 3	14 7	53 14	35	21	1	
44	46 39	12 36	47 33	12 51	48 27	13 0	49 21	13 50	50 16	13 37	51 10	13 53	52 2	14 8	53 14	36	22	1	
46	46 39	12 37	47 33	12 52	48 27	13 0	49 21	13 50	50 15	13 38	51 9	13 54	52 1	14 9	53 14	37	23	1	
48	46 38	12 38	47 32	12 53	48 26	13 0	49 20	13 50	50 14	13 39	51 8	13 55	52 1	14 10	53 14	38	24	1	
50	46 37	12 39	47 31	12 54	48 25	13 0	49 19	13 50	50 13	13 40	51 7	13 56	52 1	14 11	53 14	39	25	1	
52	46 37	12 40	47 31	12 55	48 25	13 0	49 19	13 50	50 13	13 41	51 7	13 57	52 1	14 12	53 14	40	26	1	
54	46 36	12 41	47 30	12 56	48 24	13 0	49 18	13 50	50 12	13 42	51 6	13 58	52 0	14 13	53 14	41	27	1	
56	46 35	12 42	47 29	12 57	48 23	13 0	49 17	13 50	50 11	13 43	51 5	13 59	52 0	14 14	53 14	42	28	1	
58	46 35	12 43	47 29	12 58	48 23	13 0	49 17	13 50	50 11	13 44	51 4	14 0	52 0	14 15	53 14	43	29	1	

(26° and 27°) The Correction of the Moon's Altitude, and the Aux. Angle A. (w.)																	
App Alt	Minutes of Moon's Hor. Parallax.																Seconds of H. P.
	54'	55'	56'	57'	58'	59'	60'	61'	54'	55'	56'	57'	58'	59'	60'	61'	
26°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	1 0
0	46 34	12 44	47 28	12 50	48 22	13 15	49 16	13 30	50 10	13 46	51 41	14 2	51 58	14 17	52 52	14 33	2 1
2	46 33	12 45	47 27	13 0	48 21	13 16	49 15	13 31	50 9	13 47	51 40	14 3	51 57	14 18	52 51	14 34	3 2
4	46 33	12 46	47 27	13 1	48 21	13 17	49 14	13 32	50 8	13 48	51 39	14 4	51 56	14 19	52 50	14 35	4 3
6	46 32	12 47	47 26	13 2	48 20	13 18	49 14	13 33	50 7	13 49	51 38	14 5	51 55	14 20	52 49	14 36	5 4
8	46 31	12 47	47 25	13 3	48 19	13 19	49 13	13 34	50 6	13 50	51 37	14 6	51 54	14 21	52 48	14 37	6 5
10	46 31	12 48	47 25	13 4	48 19	13 20	49 12	13 35	50 5	13 51	51 36	14 7	51 53	14 22	52 47	14 38	7 6
12	46 30	12 49	47 24	13 5	48 18	13 21	49 11	13 36	50 4	13 52	51 35	14 8	51 52	14 23	52 46	14 39	8 7
14	46 29	12 50	47 23	13 6	48 17	13 22	49 11	13 37	50 3	13 53	51 34	14 9	51 51	14 24	52 45	14 40	9 8
16	46 29	12 51	47 23	13 7	48 16	13 23	49 10	13 38	50 2	13 54	51 33	14 10	51 50	14 25	52 44	14 41	10 9
18	46 28	12 52	47 22	13 8	48 16	13 24	49 10	13 40	50 1	13 55	51 32	14 11	51 49	14 26	52 43	14 42	11 10
20	46 27	12 53	47 21	13 9	48 15	13 25	49 9	13 41	50 0	13 56	51 31	14 12	51 48	14 27	52 42	14 43	12 11
22	46 27	12 54	47 21	13 10	48 14	13 26	49 8	13 42	50 0	13 57	51 30	14 13	51 47	14 28	52 41	14 44	13 12
24	46 26	12 55	47 20	13 11	48 14	13 27	49 7	13 43	50 0	13 58	51 29	14 14	51 46	14 29	52 40	14 45	14 13
26	46 25	12 56	47 19	13 12	48 13	13 28	49 6	13 44	50 0	13 59	51 28	14 15	51 45	14 30	52 39	14 46	15 14
28	46 25	12 57	47 18	13 13	48 12	13 29	49 5	13 45	50 0	14 0	51 27	14 16	51 44	14 31	52 38	14 47	16 15
30	46 24	12 58	47 17	13 14	48 12	13 30	49 4	13 46	50 0	14 1	51 26	14 17	51 43	14 32	52 37	14 48	17 16
32	46 23	12 59	47 17	13 15	48 11	13 31	49 3	13 47	50 0	14 2	51 25	14 18	51 42	14 33	52 36	14 49	18 17
34	46 23	13 0	47 16	13 16	48 10	13 32	49 2	13 48	50 0	14 3	51 24	14 19	51 41	14 34	52 35	14 50	19 18
36	46 22	13 1	47 16	13 17	48 9	13 33	49 1	13 49	50 0	14 4	51 23	14 20	51 40	14 35	52 34	14 51	20 19
38	46 21	13 2	47 15	13 18	48 8	13 34	49 0	13 50	50 0	14 5	51 22	14 21	51 39	14 36	52 33	14 52	21 20
40	46 21	13 3	47 14	13 19	48 7	13 35	48 59	13 51	50 0	14 6	51 21	14 22	51 38	14 37	52 32	14 53	22 21
42	46 20	13 4	47 14	13 20	48 6	13 36	48 58	13 52	50 0	14 7	51 20	14 23	51 37	14 38	52 31	14 54	23 22
44	46 19	13 5	47 13	13 21	48 5	13 37	48 57	13 53	50 0	14 8	51 19	14 24	51 36	14 39	52 30	14 55	24 23
46	46 19	13 6	47 12	13 22	48 4	13 38	48 56	13 54	50 0	14 9	51 18	14 25	51 35	14 40	52 29	14 56	25 24
48	46 18	13 7	47 12	13 23	48 3	13 39	48 55	13 55	50 0	14 10	51 17	14 26	51 34	14 41	52 28	14 57	26 25
50	46 17	13 8	47 11	13 24	48 2	13 40	48 54	13 56	50 0	14 11	51 16	14 27	51 33	14 42	52 27	14 58	27 26
52	46 17	13 9	47 10	13 25	48 1	13 41	48 53	13 57	50 0	14 12	51 15	14 28	51 32	14 43	52 26	14 59	28 27
54	46 16	13 10	47 9	13 26	48 0	13 42	48 52	13 58	50 0	14 13	51 14	14 29	51 31	14 44	52 25	15 0	29 28
56	46 15	13 11	47 8	13 27	47 59	13 43	48 51	13 59	50 0	14 14	51 13	14 30	51 30	14 45	52 24	15 1	30 29
58	46 15	13 12	47 7	13 28	47 58	13 44	48 50	14 0	50 0	14 15	51 12	14 31	51 29	14 46	52 23	15 2	31 30
27°	54'	55'	56'	57'	58'	59'	60'	61'	54'	55'	56'	57'	58'	59'	60'	61'	32 31
0	46 14	13 13	47 7	13 29	47 57	13 45	48 49	14 1	49 48	14 17	50 41	14 33	51 28	14 47	52 22	15 3	32 31
2	46 13	13 14	47 6	13 30	47 56	13 46	48 48	14 2	49 47	14 18	50 40	14 34	51 27	14 48	52 21	15 4	33 32
4	46 12	13 14	47 5	13 31	47 55	13 47	48 47	14 3	49 46	14 19	50 39	14 35	51 26	14 49	52 20	15 5	34 33
6	46 12	13 15	47 4	13 32	47 54	13 48	48 46	14 4	49 45	14 20	50 38	14 36	51 25	14 50	52 19	15 6	35 34
8	46 11	13 16	47 3	13 33	47 53	13 49	48 45	14 5	49 44	14 21	50 37	14 37	51 24	14 51	52 18	15 7	36 35
10	46 10	13 17	47 2	13 34	47 52	13 50	48 44	14 6	49 43	14 22	50 36	14 38	51 23	14 52	52 17	15 8	37 36
12	46 10	13 18	47 1	13 35	47 51	13 51	48 43	14 7	49 42	14 23	50 35	14 39	51 22	14 53	52 16	15 9	38 37
14	46 9	13 19	47 0	13 36	47 50	13 52	48 42	14 8	49 41	14 24	50 34	14 40	51 21	14 54	52 15	15 10	39 38
16	46 8	13 20	46 59	13 37	47 49	13 53	48 41	14 9	49 40	14 25	50 33	14 41	51 20	14 55	52 14	15 11	40 39
18	46 7	13 21	46 58	13 38	47 48	13 54	48 40	14 10	49 39	14 26	50 32	14 42	51 19	14 56	52 13	15 12	41 40
20	46 6	13 22	46 57	13 39	47 47	13 55	48 39	14 11	49 38	14 27	50 31	14 43	51 18	14 57	52 12	15 13	42 41
22	46 5	13 23	46 56	13 40	47 46	13 56	48 38	14 12	49 37	14 28	50 30	14 44	51 17	14 58	52 11	15 14	43 42
24	46 4	13 24	46 55	13 41	47 45	13 57	48 37	14 13	49 36	14 29	50 29	14 45	51 16	14 59	52 10	15 15	44 43
26	46 3	13 25	46 54	13 42	47 44	13 58	48 36	14 14	49 35	14 30	50 28	14 46	51 15	15 0	52 9	15 16	45 44
28	46 2	13 26	46 53	13 43	47 43	13 59	48 35	14 15	49 34	14 31	50 27	14 47	51 14	15 1	52 8	15 17	46 45
30	46 1	13 27	46 52	13 44	47 42	14 0	48 34	14 16	49 33	14 32	50 26	14 48	51 13	15 2	52 7	15 18	47 46
32	46 0	13 28	46 51	13 45	47 41	14 1	48 33	14 17	49 32	14 33	50 25	14 49	51 12	15 3	52 6	15 19	48 47
34	45 59	13 29	46 50	13 46	47 40	14 2	48 32	14 18	49 31	14 34	50 24	14 50	51 11	15 4	52 5	15 20	49 48
36	45 58	13 30	46 49	13 47	47 39	14 3	48 31	14 19	49 30	14 35	50 23	14 51	51 10	15 5	52 4	15 21	50 49
38	45 57	13 31	46 48	13 48	47 38	14 4	48 30	14 20	49 29	14 36	50 22	14 52	51 9	15 6	52 3	15 22	51 50
40	45 56	13 32	46 47	13 49	47 37	14 5	48 29	14 21	49 28	14 37	50 21	14 53	51 8	15 7	52 2	15 23	52 51
42	45 55	13 33	46 46	13 50	47 36	14 6	48 28	14 22	49 27	14 38	50 20	14 54	51 7	15 8	52 1	15 24	53 52
44	45 54	13 34	46 45	13 51	47 35	14 7	48 27	14 23	49 26	14 39	50 19	14 55	51 6	15 9	52 0	15 25	54 53
46	45 53	13 35	46 44	13 52	47 34	14 8	48 26	14 24	49 25	14 40	50 18	14 56	51 5	15 10	51 59	15 26	55 54
48	45 52	13 36	46 43	13 53	47 33	14 9	48 25	14 25	49 24	14 41	50 17	14 57	51 4	15 11	51 58	15 27	56 55
50	45 51	13 37	46 42	13 54	47 32	14 10	48 24	14 26	49 23	14 42	50 16	14 58	51 3	15 12	51 57	15 28	57 56
52	45 50	13 38	46 41	13 55	47 31	14 11	48 23	14 27	49 22	14 43	50 15	14 59	51 2	15 13	51 56	15 29	58 57
54	45 49	13 39	46 40	13 56	47 30	14 12	48 22	14 28	49 21	14 44	50 14	15 0	51 1	15 14	51 55	15 30	59 58
56	45 48	13 40	46 39	13 57	47 29	14 13	48 21	14 29	49 20	14 45	50 13	15 1	51 0	15 15	51 54	15 31	60 59
58	45 47	13 41	46 38	13 58	47 28	14 14	48 20	14 30	49 19	14 46	50 12	15 2	50 59	15 16	51 53	15 32	61 60

(w.) The Correction of the Moon's Altitude, and the Aux. Angle A. (28° and 29°)		Minutes of Moon's Hor. Parallax.																Seconds of H. P.	
App. Alt.		54'		55'		56'		57'		58'		59'		60'		61'			
		Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A		
28		+	60"	+	60"	+	60"	+	60"	+	60"	+	60"	+	60"	+	60"		
0	45 52	13 41	46 45	13 58	47 38	14 15	48 31	14 31	49 24	14 48	50 17	15 5	51 10	15 21	52	3 15	38	1	10
2	45 52	13 42	46 45	13 59	47 38	14 16	48 31	14 32	49 24	14 49	50 17	15 5	51 10	15 22	52	3 15	38	2	11
4	45 51	13 43	46 44	14 0	47 37	14 17	48 30	14 33	49 23	14 50	50 16	15 7	51 9	15 23	52	2 15	40	3	12
6	45 50	13 44	46 43	14 1	47 36	14 18	48 29	14 34	49 22	14 51	50 15	15 8	51 8	15 24	52	1 15	41	4	13
8	45 49	13 45	46 42	14 2	47 35	14 19	48 28	14 35	49 21	14 52	50 14	15 9	51 7	15 25	52	0 15	42	5	14
10	45 49	13 46	46 42	14 3	47 35	14 20	48 27	14 36	49 20	14 53	50 13	15 10	51 6	15 27	51	59	15	6	15
12	45 48	13 47	46 41	14 4	47 34	14 21	48 27	14 37	49 20	14 54	50 12	15 11	51 5	15 28	51	58	15	7	16
14	45 47	13 48	46 40	14 5	47 33	14 22	48 26	14 38	49 19	14 55	50 11	15 12	51 4	15 29	51	57	15	8	17
16	45 46	13 49	46 39	14 6	47 32	14 23	48 25	14 39	49 18	14 56	50 11	15 13	51 3	15 30	51	57	15	9	18
18	45 46	13 50	46 38	14 7	47 31	14 24	48 24	14 40	49 17	14 57	50 10	15 14	51 2	15 31	51	56	15	10	19
20	45 45	13 51	46 38	14 8	47 31	14 24	48 23	14 41	49 16	14 58	50 9	15 15	51 1	15 32	51	55	15	11	20
22	45 44	13 52	46 37	14 9	47 30	14 25	48 23	14 42	49 16	14 59	50 8	15 16	51 1	15 33	51	54	15	12	21
24	45 43	13 53	46 36	14 10	47 29	14 26	48 22	14 43	49 15	15 0	50 7	15 17	51 0	15 34	51	53	15	13	22
26	45 43	13 54	46 36	14 11	47 28	14 27	48 21	14 44	49 14	15 1	50 6	15 18	51 0	15 35	51	52	15	14	23
28	45 42	13 55	46 35	14 11	47 28	14 28	48 20	14 45	49 13	15 2	50 5	15 19	50 59	15 36	51	51	15	15	24
30	45 41	13 56	46 34	14 12	47 27	14 29	48 20	14 46	49 12	15 3	50 4	15 20	50 58	15 37	51	50	15	16	25
32	45 40	13 56	46 33	14 13	47 26	14 30	48 19	14 47	49 11	15 4	50 3	15 21	50 57	15 38	51	50	15	17	26
34	45 40	13 57	46 32	14 14	47 25	14 31	48 18	14 48	49 11	15 5	50 2	15 22	50 56	15 39	51	49	15	18	27
36	45 39	13 58	46 32	14 15	47 24	14 32	48 17	14 49	49 10	15 6	50 1	15 23	50 55	15 40	51	48	15	19	28
38	45 38	13 59	46 31	14 16	47 24	14 33	48 16	14 50	49 9	15 7	50 0	15 24	50 54	15 41	51	47	15	20	29
40	45 37	14 0	46 30	14 17	47 23	14 34	48 15	14 51	49 8	15 8	50 0	15 25	50 53	15 42	51	46	15	21	30
42	45 37	14 1	46 29	14 18	47 22	14 35	48 15	14 52	49 7	15 9	50 0	15 26	50 53	15 43	51	45	15	22	31
44	45 36	14 2	46 29	14 19	47 21	14 36	48 14	14 53	49 6	15 10	49 59	15 26	50 52	15 45	51	44	15	23	32
46	45 35	14 3	46 28	14 20	47 20	14 37	48 13	14 54	49 5	15 12	49 58	15 29	50 51	15 46	51	43	15	24	33
48	45 34	14 4	46 27	14 21	47 20	14 38	48 12	14 55	49 4	15 13	49 57	15 30	50 50	15 47	51	43	15	25	34
50	45 34	14 5	46 26	14 22	47 19	14 39	48 11	14 56	49 3	15 14	49 57	15 31	50 49	15 48	51	42	15	26	35
52	45 33	14 6	46 25	14 23	47 18	14 40	48 11	14 57	49 2	15 15	49 56	15 32	50 48	15 49	51	41	15	27	36
54	45 32	14 7	46 25	14 24	47 17	14 41	48 10	14 58	49 1	15 16	49 55	15 33	50 47	15 50	51	40	15	28	37
56	45 31	14 8	46 24	14 25	47 16	14 42	48 9	14 59	49 0	15 17	49 54	15 34	50 46	15 51	51	39	15	29	38
58	45 31	14 8	46 23	14 26	47 16	14 43	48 8	15 0	49 0	15 18	49 53	15 35	50 46	15 52	51	38	15	30	39
29	54'	55'	56'	57'	58'	59'	60'	61'											
0	45 30	14 10	46 22	14 27	47 15	14 44	48 7	15 2	49 0	15 19	49 52	15 38	50 45	15 53	51	37	15	10	10
2	45 29	14 11	46 22	14 28	47 14	14 45	48 6	15 3	48 59	15 20	49 51	15 37	50 44	15 54	51	36	15	11	11
4	45 28	14 12	46 21	14 29	47 13	14 46	48 5	15 4	48 58	15 21	49 50	15 38	50 43	15 55	51	36	15	12	12
6	45 27	14 13	46 20	14 30	47 12	14 47	48 4	15 5	48 57	15 22	49 50	15 39	50 42	15 56	51	35	15	13	13
8	45 27	14 13	46 19	14 31	47 12	14 48	48 3	15 6	48 56	15 23	49 49	15 40	50 41	15 57	51	34	15	14	14
10	45 26	14 14	46 18	14 32	47 11	14 49	48 2	15 6	48 55	15 24	49 48	15 41	50 40	15 58	51	33	15	15	15
12	45 25	14 15	46 18	14 33	47 10	14 50	48 1	15 7	48 54	15 25	49 47	15 42	50 40	15 59	51	32	15	16	16
14	45 24	14 16	46 17	14 34	47 9	14 51	48 0	15 8	48 54	15 26	49 46	15 43	50 39	16 0	51	31	15	17	17
16	45 24	14 17	46 16	14 35	47 8	14 52	48 0	15 9	48 53	15 27	49 45	15 44	50 38	16 1	51	30	15	18	18
18	45 23	14 18	46 15	14 36	47 7	14 53	48 0	15 10	48 52	15 28	49 45	15 45	50 37	16 2	51	29	15	19	19
20	45 22	14 19	46 14	14 37	47 6	14 54	47 59	15 11	48 51	15 29	49 44	15 46	50 36	16 3	51	28	15	20	20
22	45 21	14 20	46 14	14 38	47 5	14 55	47 58	15 12	48 51	15 30	49 43	15 47	50 36	16 4	51	27	15	21	21
24	45 21	14 21	46 13	14 38	47 5	14 56	47 57	15 13	48 50	15 31	49 42	15 48	50 34	16 5	51	27	15	22	22
26	45 20	14 22	46 12	14 39	47 4	14 57	47 57	15 14	48 49	15 32	49 41	15 49	50 33	16 6	51	26	15	23	23
28	45 19	14 23	46 11	14 40	47 3	14 58	47 56	15 15	48 48	15 33	49 40	15 50	50 32	16 7	51	25	15	24	24
30	45 18	14 24	46 10	14 41	47 2	14 59	47 55	15 16	48 47	15 34	49 39	15 51	50 32	16 8	51	24	15	25	25
32	45 17	14 25	46 10	14 42	47 1	15 0	47 54	15 17	48 46	15 35	49 38	15 52	50 31	16 10	51	23	15	26	26
34	45 17	14 26	46 9	14 43	47 1	15 1	47 53	15 18	48 45	15 36	49 38	15 53	50 30	16 11	51	22	15	27	27
36	45 16	14 27	46 8	14 44	47 0	15 2	47 52	15 19	48 45	15 37	49 37	15 54	50 29	16 12	51	21	15	28	28
38	45 15	14 28	46 7	14 45	46 59	15 3	47 51	15 20	48 44	15 38	49 36	15 55	50 28	16 13	51	20	15	29	29
40	45 14	14 29	46 6	14 46	46 58	15 4	47 51	15 21	48 43	15 39	49 35	15 56	50 27	16 14	51	19	15	30	30
42	45 13	14 30	46 5	14 47	46 58	15 5	47 50	15 22	48 42	15 40	49 34	15 57	50 26	16 15	51	18	15	31	31
44	45 13	14 30	46 4	14 48	46 57	15 6	47 49	15 23	48 41	15 41	49 33	15 58	50 25	16 16	51	17	15	32	32
46	45 12	14 31	46 3	14 49	46 56	15 7	47 48	15 24	48 40	15 42	49 32	15 59	50 24	16 17	51	16	15	33	33
48	45 11	14 32	46 2	14 50	46 55	15 8	47 47	15 25	48 39	15 43	49 31	16 0	50 23	16 18	51	16	15	34	34
50	45 10	14 33	46 1	14 51	46 54	15 9	47 46	15 26	48 38	15 44	49 30	16 1	50 22	16 19	51	15	15	35	35
52	45 9	14 34	46 0	14 52	46 53	15 9	47 45	15 27	48 38	15 45	49 30	16 2	50 22	16 20	51	14	15	36	36
54	45 8	14 35	46 0	14 53	46 53	15 10	47 45	15 28	48 37	15 46	49 29	16 3	50 21	16 21	51	13	15	37	37
56	45 7	14 36	46 0	14 54	46 52	15 11	47 44	15 29	48 36	15 47	49 28	16 4	50 20	16 22	51	12	15	38	38
58	45 7	14 37	45 59	14 55	46 51	15 12	47 43	15 30	48 35	15 48	49 27	16 5	50 19	16 23	51	11	15	39	39

(30° and 31°) The Correction of the Moon's Altitude, and the Aux. Angle A.																	(w.)	
App Alt.	Minutes of Moon's Hor. Parallax.																Seconds of H. P.	
	54'		55'		56'		57'		58'		59'		60'		61'		"	"
30°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	"	"
0'	45 6	14 38	45 58	14 56	46 50	15 13	47 42	15 31	48 34	15 49	49 26	16 6	50 18	16 24	51 10	16 42	1	0
2	45 5	14 39	45 57	14 57	46 49	15 14	47 41	15 32	48 33	15 50	49 25	16 7	50 17	16 25	51 9	16 43	2	1
4	45 4	14 40	45 56	14 58	46 48	15 15	47 40	15 33	48 32	15 51	49 24	16 8	50 16	16 26	51 8	16 44	3	1
6	45 4	14 41	45 56	14 58	46 48	15 16	47 40	15 34	48 31	15 52	49 23	16 9	50 15	16 27	51 7	16 45	4	2
8	45 3	14 42	45 55	14 59	46 47	15 17	47 39	15 35	48 31	15 53	49 22	16 11	50 14	16 28	51 6	16 46	5	2
10	45 2	14 43	45 54	15 0	46 46	15 18	47 38	15 36	48 30	15 54	49 21	16 12	50 13	16 29	51 5	16 47	6	2
12	45 1	14 44	45 53	15 1	46 45	15 19	47 37	15 37	48 29	15 55	49 21	16 13	50 13	16 30	51 4	16 48	7	2
14	45 0	14 44	45 52	15 2	46 44	15 20	47 36	15 38	48 28	15 56	49 20	16 14	50 12	16 31	51 3	16 48	8	2
16	45 0	14 45	45 51	15 3	46 43	15 21	47 35	15 39	48 27	15 57	49 19	16 15	50 11	16 32	51 2	16 50	9	3
18	44 59	14 46	45 50	15 4	46 43	15 22	47 34	15 40	48 26	15 58	49 18	16 16	50 10	16 34	51 1	16 51	10	3
20	44 58	14 47	45 50	15 5	46 42	15 23	47 33	15 41	48 25	15 59	49 17	16 17	50 9	16 35	51 0	16 52	11	3
22	44 57	14 48	45 49	15 6	46 41	15 24	47 33	15 42	48 24	16 0	49 16	16 18	50 8	16 36	51 0	16 54	12	3
24	44 56	14 49	45 48	15 7	46 40	15 25	47 32	15 43	48 23	16 1	49 15	16 19	50 7	16 37	50 59	16 55	13	3
26	44 56	14 50	45 47	15 8	46 39	15 26	47 31	15 44	48 23	16 2	49 14	16 20	50 6	16 38	50 58	16 56	14	3
28	44 55	14 51	45 46	15 9	46 38	15 27	47 30	15 45	48 22	16 3	49 14	16 21	50 5	16 39	50 57	16 57	15	3
30	44 54	14 52	45 45	15 10	46 37	15 28	47 29	15 46	48 21	16 4	49 13	16 22	50 4	16 40	50 56	16 58	16	3
32	44 53	14 53	45 45	15 11	46 37	15 29	47 28	15 47	48 20	16 5	49 12	16 23	50 3	16 41	50 55	16 59	17	3
34	44 52	14 54	45 44	15 12	46 36	15 30	47 27	15 48	48 19	16 6	49 11	16 24	50 2	16 42	50 54	17 0	18	3
36	44 51	14 55	45 43	15 13	46 35	15 31	47 26	15 49	48 18	16 7	49 10	16 25	50 1	16 43	50 53	17 1	19	3
38	44 51	14 56	45 42	15 14	46 34	15 32	47 26	15 50	48 17	16 8	49 9	16 26	50 0	16 44	50 52	17 2	20	3
40	44 50	14 56	45 41	15 15	46 33	15 33	47 25	15 51	48 16	16 9	49 8	16 27	50 0	16 45	50 51	17 3	21	3
42	44 49	14 57	45 40	15 16	46 32	15 34	47 24	15 52	48 15	16 10	49 7	16 28	49 59	16 46	50 50	17 4	22	3
44	44 48	14 58	45 40	15 17	46 31	15 35	47 23	15 53	48 14	16 11	49 6	16 29	49 58	16 47	50 49	17 5	23	3
46	44 47	14 59	45 39	15 18	46 30	15 35	47 22	15 54	48 13	16 12	49 5	16 30	49 57	16 48	50 48	17 6	24	3
48	44 46	15 0	45 38	15 18	46 30	15 36	47 21	15 55	48 13	16 13	49 4	16 31	49 56	16 49	50 47	17 7	25	3
50	44 46	15 1	45 37	15 19	46 29	15 37	47 20	15 56	48 12	16 14	49 3	16 32	49 55	16 50	50 46	17 8	26	3
52	44 45	15 2	45 36	15 20	46 28	15 38	47 19	15 57	48 11	16 15	49 2	16 33	49 54	16 51	50 45	17 9	27	3
54	44 44	15 3	45 35	15 21	46 27	15 39	47 18	15 57	48 10	16 16	49 1	16 34	49 53	16 52	50 44	17 10	28	3
56	44 43	15 4	45 34	15 22	46 26	15 40	47 17	15 58	48 9	16 17	49 0	16 35	49 52	16 53	50 43	17 11	29	3
58	44 42	15 5	45 34	15 23	46 25	15 41	47 17	15 59	48 8	16 18	49 0	16 36	49 51	16 54	50 42	17 12	30	3
31°	54'	55'	56'	57'	58'	59'	60'	61'	62'	63'	64'	65'	66'	67'	68'	69'	70'	71'
0	44 41	15 6	45 33	15 24	46 24	15 42	47 16	16 0	48 7	16 19	48 50	16 37	49 50	16 55	50 41	17 13	31	3
2	44 41	15 7	45 32	15 25	46 23	15 43	47 15	16 1	48 6	16 20	48 50	16 38	49 49	16 56	50 41	17 14	32	3
4	44 40	15 8	45 31	15 26	46 23	15 44	47 14	16 2	48 5	16 21	48 57	16 39	49 48	16 57	50 40	17 15	33	3
6	44 39	15 9	45 30	15 27	46 22	15 45	47 13	16 3	48 4	16 22	48 56	16 40	49 47	16 58	50 39	17 16	34	3
8	44 38	15 10	45 29	15 28	46 21	15 46	47 12	16 4	48 3	16 23	48 55	16 41	49 46	16 59	50 38	17 17	35	3
10	44 37	15 11	45 28	15 29	46 20	15 47	47 11	16 5	48 2	16 24	48 54	16 42	49 45	17 0	50 37	17 18	36	3
12	44 36	15 12	45 28	15 30	46 19	15 48	47 10	16 6	48 1	16 25	48 53	16 43	49 44	17 1	50 36	17 20	37	3
14	44 35	15 13	45 27	15 31	46 18	15 49	47 9	16 7	48 0	16 26	48 52	16 44	49 43	17 2	50 35	17 21	38	3
16	44 35	15 14	45 26	15 32	46 17	15 50	47 8	16 8	48 0	16 27	48 51	16 45	49 42	17 3	50 34	17 22	39	3
18	44 34	15 15	45 25	15 32	46 16	15 51	47 7	16 9	47 59	16 28	48 50	16 46	49 41	17 4	50 33	17 23	40	3
20	44 33	15 16	45 24	15 33	46 15	15 52	47 6	16 10	47 58	16 28	48 49	16 47	49 40	17 5	50 32	17 24	41	3
22	44 32	15 16	45 23	15 34	46 14	15 53	47 5	16 11	47 57	16 29	48 48	16 48	49 39	17 6	50 31	17 25	42	3
24	44 31	15 17	45 22	15 35	46 13	15 54	47 4	16 12	47 56	16 30	48 47	16 49	49 38	17 7	50 30	17 26	43	3
26	44 30	15 18	45 21	15 36	46 12	15 55	47 3	16 13	47 55	16 31	48 46	16 50	49 37	17 8	50 29	17 27	44	3
28	44 30	15 19	45 20	15 37	46 11	15 56	47 2	16 14	47 54	16 32	48 45	16 51	49 36	17 9	50 28	17 28	45	3
30	44 29	15 20	45 20	15 38	46 11	15 57	47 1	16 15	47 53	16 33	48 44	16 52	49 36	17 10	50 27	17 29	46	3
32	44 28	15 21	45 19	15 39	46 10	15 57	47 0	16 16	47 52	16 34	48 43	16 53	49 35	17 11	50 26	17 30	47	3
34	44 27	15 21	45 18	15 40	46 9	15 58	47 0	16 17	47 51	16 35	48 42	16 54	49 34	17 12	50 25	17 31	48	3
36	44 26	15 22	45 17	15 41	46 8	15 59	46 59	16 18	47 50	16 36	48 42	16 55	49 33	17 13	50 24	17 32	49	3
38	44 25	15 23	45 16	15 42	46 7	16 0	46 58	16 19	47 49	16 37	48 41	16 56	49 32	17 14	50 23	17 33	50	3
40	44 24	15 24	45 15	15 43	46 6	16 1	46 57	16 20	47 48	16 38	48 40	16 57	49 31	17 15	50 22	17 34	51	3
42	44 23	15 25	45 14	15 44	46 5	16 2	46 57	16 21	47 48	16 39	48 39	16 58	49 30	17 16	50 21	17 35	52	3
44	44 22	15 26	45 13	15 45	46 4	16 3	46 56	16 22	47 47	16 40	48 38	16 59	49 29	17 18	50 20	17 36	53	3
46	44 22	15 27	45 12	15 46	46 3	16 4	46 55	16 23	47 46	16 41	48 37	17 0	49 28	17 19	50 19	17 37	54	3
48	44 21	15 28	45 12	15 46	46 2	16 5	46 54	16 24	47 45	16 42	48 36	17 1	49 27	17 20	50 18	17 38	55	3
50	44 20	15 28	45 11	15 47	46 1	16 6	46 53	16 25	47 44	16 43	48 35	17 2	49 26	17 21	50 17	17 39	56	3
52	44 19	15 30	45 10	15 48	46 0	16 7	46 52	16 26	47 43	16 44	48 34	17 3	49 25	17 22	50 16	17 40	57	3
54	44 18	15 31	45 9	15 49	46 0	16 8	46 51	16 27	47 42	16 45	48 33	17 4	49 24	17 23	50 15	17 41	58	3
56	44 17	15 31	45 8	15 50	45 59	16 9	46 50	16 28	47 41	16 46	48 32	17 5	49 23	17 24	50 14	17 42	59	3
58	44 16	15 32	45 7	15 51	45 58	16 10	46 49	16 29	47 40	16 47	48 31	17 6	49 22	17 25	50 13	17 43	60	3

(w.)		The Correction of the Moon's Altitude, and the Aux. Angle A. (32° and 33°)																Seconds of H. P.	
App. Alt.	Minutes of Moon's Hor. Parallax.																32	33	
	54'		55'		56'		57'		58'		59'		60'		61'				
32	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	1	2	
	+	60"	+	60"	+	60"	+	60"	+	60"	+	60"	+	60"	+	60"			
0'	44 13	15 33 45	6 15 52	45 57	16 11 46	48 48	16 29 47	39	16 48 48	20	17 7 49	21	17 26 50	12	17 44	1	1	0	
2	44 14	15 34 45	6 15 53	45 56	16 12 46	47 47	16 30 47	38	16 49 48	20	17 8 49	20	17 27 50	11	17 45	2	2	1	
4	44 14	15 35 45	6 15 54	45 55	16 13 46	46 46	16 31 47	37	16 50 48	20	17 9 49	19	17 28 50	10	17 46	3	3	1	
6	44 13	15 36 45	6 15 55	45 54	16 14 46	45 45	16 32 47	36	16 51 48	20	17 10 49	18	17 29 50	9	17 47	4	4	2	
8	44 12	15 37 45	6 15 56	45 53	16 15 46	44 44	16 33 47	35	16 52 48	20	17 11 49	17	17 30 50	8	17 48	5	5	2	
10	44 11	15 38 45	6 15 57	45 52	16 16 46	43 43	16 34 47	34	16 53 48	20	17 12 49	16	17 31 50	7	17 49	6	6	3	
12	44 10	15 39 45	6 15 58	45 52	16 16 46	42 42	16 35 47	33	16 54 48	24	17 13 49	15	17 32 50	6	17 50	7	7	3	
14	44 9	15 40 45	6 15 59	45 51	16 17 46	41 41	16 36 47	32	16 55 48	23	17 14 49	14	17 33 50	4	17 51	8	8	4	
16	44 8	15 41 44	59 59	45 50	16 18 46	40 40	16 37 47	31	16 56 48	22	17 15 49	13	17 34 50	3	17 52	9	9	4	
18	44 7	15 41 44	58 10	45 49	16 19 46	39 39	16 38 47	30	16 57 48	21	17 16 49	12	17 35 50	2	17 53	10	10	4	
20	44 6	15 42 44	57 16	45 48	16 20 46	38 38	16 39 47	29	16 58 48	20	17 17 49	11	17 36 50	1	17 54	11	11	4	
22	44 5	15 43 44	56 16	45 47	16 21 46	38 38	16 40 47	28	16 59 48	19	17 18 49	10	17 37 50	0	17 55	12	12	5	
24	44 5	15 44 44	55 16	45 46	16 22 46	37 37	16 41 47	27	17 0 48	18	17 19 49	9	17 38 50	0	17 56	13	13	5	
26	44 4	15 45 44	54 16	45 45	16 23 46	36 36	16 42 47	26	17 1 48	17	17 20 49	8	17 39 50	0	17 57	14	14	5	
28	44 3	15 46 44	53 16	45 44	16 24 46	35 35	16 43 47	25	17 2 48	16	17 21 49	7	17 40 50	0	17 58	15	15	5	
30	44 2	15 47 44	52 16	45 43	16 25 46	34 34	16 44 47	24	17 3 48	15	17 22 49	6	17 41 50	0	17 59	16	16	6	
32	44 1	15 48 44	52 16	45 42	16 26 46	33 33	16 45 47	23	17 4 48	14	17 23 49	5	17 42 50	0	18 0	17	17	6	
34	44 0	15 49 44	51 16	45 41	16 27 46	32 32	16 46 47	23	17 5 48	13	17 24 49	4	17 43 50	0	18 1	18	18	6	
36	43 59	15 50 44	50 16	45 40	16 28 46	31 31	16 47 47	22	17 6 48	12	17 25 49	3	17 44 50	0	18 2	19	19	6	
38	43 58	15 51 44	49 16	45 39	16 29 46	30 30	16 48 47	21	17 7 48	11	17 26 49	2	17 45 50	0	18 3	20	20	6	
40	43 57	15 51 44	48 16	45 38	16 30 46	29 29	16 49 47	20	17 8 48	10	17 27 49	1	17 46 50	0	18 4	21	21	6	
42	43 57	15 52 44	47 16	45 38	16 31 46	28 28	16 50 47	19	17 9 48	9	17 28 49	0	17 47 50	0	18 5	22	22	6	
44	43 56	15 53 44	46 16	45 37	16 31 46	27 27	16 51 47	18	17 10 48	8	17 29 49	0	17 48 50	0	18 6	23	23	6	
46	43 55	15 54 44	45 16	45 36	16 32 46	26 26	16 52 47	17	17 11 48	7	17 30 49	0	17 49 50	0	18 7	24	24	6	
48	43 54	15 55 44	44 16	45 35	16 33 46	25 25	16 53 47	16	17 12 48	6	17 31 49	0	17 50 50	0	18 8	25	25	6	
50	43 53	15 56 44	43 16	45 34	16 34 46	24 24	16 54 47	15	17 13 48	5	17 32 49	0	17 51 50	0	18 9	26	26	6	
52	43 52	15 57 44	43 16	45 33	16 35 46	23 23	16 54 47	14	17 14 48	4	17 33 49	0	17 52 50	0	18 10	27	27	6	
54	43 51	15 58 44	42 16	45 32	16 36 46	22 22	16 55 47	13	17 15 48	3	17 34 49	0	17 53 49	0	18 11	28	28	6	
56	43 50	15 59 44	41 16	45 31	16 37 46	21 21	16 56 47	12	17 16 48	2	17 35 49	0	17 54 49	0	18 12	29	29	6	
58	43 49	16 0 44	40 16	45 30	16 38 46	20 20	16 57 47	11	17 17 48	1	17 36 49	0	17 55 49	0	18 13	30	30	6	
33°	54'	55'	56'	57'	58'	59'	60'	61'											
0'	43 48	16 1 44	39 16	20 45 20	16 39 46	19	16 58 47	10	17 17 48	0	17 37 48	51	17 56 49	41	18 13	41	41	13	
2	43 48	16 1 44	38 16	21 45 20	16 40 46	19	16 59 47	9	17 18 47	59	17 38 48	50	17 57 49	40	18 16	42	42	13	
4	43 47	16 1 44	37 16	22 45 27	16 41 46	18	17 0 47	8	17 19 47	58	17 39 48	49	17 58 49	39	18 17	43	43	14	
6	43 46	16 3 44	36 16	23 45 26	16 42 46	17	1 47 17	7	17 20 47	57	17 40 48	47	17 59 49	38	18 18	44	44	14	
8	43 45	16 4 44	35 16	24 45 25	16 43 46	16	1 47 17	6	17 21 47	56	17 41 48	46	18 0 49	37	18 19	45	45	15	
10	43 44	16 5 44	34 16	25 45 24	16 44 46	15	1 47 17	5	17 22 47	55	17 42 48	45	18 1 49	36	18 20	46	46	15	
12	43 43	16 6 44	33 16	26 45 23	16 45 46	14	1 47 17	4	17 23 47	54	17 43 48	44	18 2 49	35	18 21	47	47	16	
14	43 42	16 7 44	32 16	26 45 22	16 46 46	13	1 47 17	3	17 24 47	53	17 44 48	43	18 3 49	34	18 22	48	48	16	
16	43 41	16 8 44	31 16	27 45 22	16 47 46	12	1 47 17	2	17 25 47	52	17 45 48	42	18 4 49	33	18 23	49	49	16	
18	43 40	16 9 44	30 16	28 45 21	16 48 46	11	1 47 17	1	17 26 47	51	17 46 48	41	18 5 49	32	18 24	50	50	17	
20	43 39	16 10 44	29 16	29 45 20	16 49 46	10	1 47 17	0	17 27 47	50	17 47 48	40	18 6 49	31	18 25	51	51	17	
22	43 38	16 10 44	28 16	30 45 19	16 49 46	9	1 47 17	0	17 28 47	49	17 47 48	39	18 7 49	30	18 26	52	52	18	
24	43 37	16 11 44	28 16	31 45 18	16 50 46	8	1 47 17	0	17 29 47	48	17 48 48	38	18 8 49	29	18 27	53	53	18	
26	43 37	16 12 44	27 16	32 45 17	16 51 46	7	1 47 17	0	17 30 47	47	17 49 48	37	18 9 49	28	18 28	54	54	19	
28	43 36	16 13 44	26 16	33 45 16	16 52 46	6	1 47 17	0	17 31 47	46	17 50 48	36	18 10 49	27	18 29	55	55	19	
30	43 35	16 14 44	26 16	34 45 15	16 53 46	5	1 47 17	0	17 32 47	45	17 51 48	35	18 11 49	26	18 30	56	56	20	
32	43 34	16 15 44	24 16	35 45 14	16 54 46	4	1 47 17	0	17 33 47	44	17 52 48	34	18 12 49	25	18 31	57	57	20	
34	43 33	16 16 44	23 16	36 45 13	16 55 46	3	1 47 17	0	17 34 47	43	17 53 48	33	18 13 49	24	18 32	58	58	21	
36	43 32	16 17 44	22 16	37 45 12	16 56 46	2	1 47 17	0	17 35 47	42	17 54 48	32	18 14 49	23	18 33	59	59	21	
38	43 31	16 18 44	21 16	38 45 11	16 57 46	1	1 47 17	0	17 36 47	41	17 55 48	31	18 15 49	22	18 34	60	60	22	
40	43 30	16 19 44	20 16	39 45 10	16 58 46	0	1 47 17	0	17 37 47	40	17 56 48	30	18 16 49	21	18 35	61	61	22	
42	43 29	16 19 44	19 16	40 45 9	16 59 46	0	1 47 17	0	17 38 47	39	17 57 48	29	18 17 49	20	18 36	62	62	23	
44	43 28	16 20 44	18 16	41 45 8	17 0 46	0	1 47 17	0	17 39 47	38	17 58 48	28	18 18 49	19	18 37	63	63	23	
46	43 27	16 21 44	17 16	42 45 7	17 1 46	0	1 47 17	0	17 40 47	37	17 59 48	27	18 19 49	18	18 38	64	64	24	
48	43 26	16 22 44	16 16	43 45 6	17 2 46	0	1 47 17	0	17 41 47	36	18 0 48	26	18 20 49	17	18 39	65	65	24	
50	43 25	16 23 44	15 16	44 45 5	17 3 46	0	1 47 17	0	17 42 47	35	18 1 48	25	18 21 49	16	18 40	66	66	25	
52	43 24	16 24 44	14 16	45 45 4	17 4 46	0	1 47 17	0	17 43 47	34	18 2 48	24	18 22 49	15	18 41	67	67	25	
54	43 24	16 25 44	13 16	46 45 3	17 5 46	0	1 47 17	0	17 44 47	33	18 3 48	23	18 23 49	14	18 42	68	68	26	
56	43 23	16 26 44	12 16	47 45 2	17 6 46	0	1 47 17	0	17 45 47	32	18 4 48	22	18 24 49	13	18 43	69	69	26	
58	43 22	16 27 44	12 16																

(34° and 55°) The Correction of the Moon's Altitude, and the Aux. Angle A.

(w.)

App. Alt.	Minutes of Moon's Hor. Parallax.																Seconds of H. P.	
	54'		55'		56'		57'		58'		59'		60'		61'		1	2
34°	Corr. +	A 60"	Corr. +	A 60"	Corr. +	A 60"	Corr. +	A 60"	Corr. +	A 60"	Corr. +	A 60"	Corr. +	A 60"	Corr. +	A 60"	1	2
0'	43 21	16 28 44	11	16 47	45 0	17 7 45	50	17 27	46 40	17 46	47 30	18 6 48	18 26 49	18 46	18 47	18 48	1	0
2	43 20	16 28 44	10	16 48	44 59	17 8 45	49	17 28	46 39	17 47	47 29	18 7 48	18 27 49	18 47	18 48	18 49	2	1
4	43 19	16 29 44	9	16 49	44 58	17 9 45	48	17 29	46 38	17 48	47 27	18 8 48	18 28 49	18 48	18 49	18 50	3	2
6	43 18	16 30 44	8	16 50	44 57	17 10 45	47	17 30	46 37	17 49	47 26	18 9 48	18 29 49	18 49	18 50	18 51	4	3
8	43 17	16 31 44	7	16 51	44 56	17 11 45	46	17 30	46 36	17 50	47 25	18 10 48	18 30 49	18 50	18 51	18 52	5	4
10	43 16	16 32 44	6	16 52	44 55	17 12 45	45	17 31	46 35	17 51	47 24	18 11 48	18 31 49	18 51	18 52	18 53	6	5
12	43 15	16 33 44	5	16 53	44 54	17 13 45	44	17 32	46 34	17 52	47 23	18 12 48	18 32 49	18 52	18 53	18 54	7	6
14	43 14	16 34 44	4	16 54	44 53	17 14 45	43	17 33	46 33	17 53	47 22	18 13 48	18 33 49	18 53	18 54	18 55	8	7
16	43 13	16 35 44	3	16 55	44 52	17 15 45	42	17 34	46 32	17 54	47 21	18 14 48	18 34 49	18 54	18 55	18 56	9	8
18	43 12	16 36 44	2	16 56	44 51	17 16 45	41	17 35	46 30	17 55	47 20	18 15 48	18 35 49	18 55	18 56	18 57	10	9
20	43 11	16 36 44	1	16 56	44 50	17 16 45	40	17 36	46 30	17 56	47 19	18 16 48	18 36 49	18 56	18 57	18 58	11	10
22	43 10	16 37 44	0	16 57	44 49	17 17 45	39	17 37	46 28	17 57	47 18	18 17 48	18 37 49	18 57	18 58	18 59	12	11
24	43 9	16 38 43	59	16 58	44 48	17 18 45	38	17 38	46 27	17 58	47 17	18 18 48	18 38 49	18 58	18 59	19 00	13	12
26	43 8	16 39 43	58	17 0	44 47	17 19 45	37	17 39	46 26	17 59	47 16	18 19 48	18 39 49	18 59	19 00	19 01	14	13
28	43 7	16 40 43	57	17 1	44 46	17 20 45	36	17 40	46 25	18 0	47 15	18 20 48	18 40 49	19 00	19 01	19 02	15	14
30	43 6	16 41 43	56	17 2	44 45	17 21 45	35	17 41	46 24	18 1	47 14	18 21 48	18 41 49	19 01	19 02	19 03	16	15
32	43 5	16 42 43	55	17 3	44 44	17 22 45	34	17 42	46 23	18 2	47 13	18 22 48	18 42 49	19 02	19 03	19 04	17	16
34	43 4	16 43 43	54	17 4	44 43	17 23 45	33	17 43	46 22	18 3	47 12	18 23 48	18 43 49	19 03	19 04	19 05	18	17
36	43 3	16 44 43	53	17 5	44 42	17 24 45	32	17 44	46 21	18 4	47 10	18 24 48	18 44 49	19 04	19 05	19 06	19	18
38	43 2	16 45 43	52	17 6	44 41	17 25 45	31	17 45	46 20	18 5	47 9	18 25 48	18 45 49	19 05	19 06	19 07	20	19
40	43 1	16 46 43	51	17 7	44 40	17 26 45	30	17 46	46 19	18 6	47 8	18 26 48	18 46 49	19 06	19 07	19 08	21	20
42	43 0	16 47 43	50	17 8	44 39	17 27 45	29	17 47	46 18	18 7	47 7	18 27 48	18 47 49	19 07	19 08	19 09	22	21
44	42 59	16 48 43	49	17 9	44 38	17 28 45	28	17 48	46 17	18 8	47 6	18 28 48	18 48 49	19 08	19 09	19 10	23	22
46	42 58	16 48 43	48	17 10	44 37	17 29 45	27	17 49	46 16	18 9	47 5	18 29 48	18 49 49	19 09	19 10	19 11	24	23
48	42 57	16 49 43	47	17 11	44 36	17 30 45	26	17 50	46 15	18 10	47 4	18 30 48	18 50 49	19 10	19 11	19 12	25	24
50	42 56	16 50 43	46	17 12	44 35	17 31 45	25	17 51	46 14	18 11	47 3	18 31 48	18 51 49	19 11	19 12	19 13	26	25
52	42 55	16 51 43	45	17 13	44 34	17 32 45	24	17 52	46 13	18 12	47 2	18 32 48	18 52 49	19 12	19 13	19 14	27	26
54	42 54	16 52 43	44	17 14	44 33	17 33 45	23	17 53	46 12	18 13	47 1	18 33 48	18 53 49	19 13	19 14	19 15	28	27
56	42 53	16 53 43	43	17 15	44 32	17 34 45	22	17 54	46 11	18 14	47 0	18 34 48	18 54 49	19 14	19 15	19 16	29	28
58	42 52	16 54 43	42	17 16	44 31	17 35 45	21	17 55	46 10	18 15	46 59	18 35 48	18 55 49	19 15	19 16	19 17	30	29
35°	42 51	16 54	41	17 17	44 30	17 36 45	20	17 56	46 9	18 16	46 58	18 36 48	18 56 49	19 16	19 17	19 18	31	30
0'	42 50	16 55	40	17 18	44 29	17 37 45	19	17 57	46 8	18 17	46 57	18 37 48	18 57 49	19 17	19 18	19 19	32	31
2	42 50	16 56	43 39	17 18 44	28 17 36	45 17	17 57 46	6 18 17	46 55	18 37	47 45	18 57 48	34 19 18	43 36	15			
4	42 49	16 57	43 38	17 17 44	27 17 37	45 16	17 58 46	5 18 18	46 54	18 38	47 43	18 58 48	33 19 18	43 35	15			
6	42 48	16 58	43 37	17 16 44	26 17 38	45 15	17 59 46	4 18 19	46 53	18 39	47 42	18 59 48	32 19 20	43 34	16			
8	42 47	16 59	43 36	17 15 44	25 17 39	45 14	17 59 46	3 18 20	46 52	18 40	47 41	19 0	48 30	19 21	43 33	16		
10	42 46	16 59	43 35	17 20 44	24 17 40	45 13	18 0	2 18 21	46 51	18 41	47 40	19 1	48 29	19 22	43 32	16		
12	42 45	17 0	43 34	17 21 44	23 17 41	45 12	18 1	1 18 22	46 50	18 42	47 39	19 2	48 28	19 23	43 31	16		
14	42 44	17 1	43 33	17 22 44	22 17 42	45 11	18 2	0 18 23	46 49	18 43	47 38	19 3	48 27	19 24	43 30	16		
16	42 43	17 2	43 32	17 23 44	21 17 43	45 10	18 3	5 18 23	46 48	18 44	47 37	19 4	48 26	19 25	43 29	16		
18	42 42	17 3	43 31	17 24 44	20 17 44	45 9	18 4	4 18 24	46 47	18 45	47 36	19 5	48 25	19 26	43 28	16		
20	42 41	17 4	43 30	17 25 44	19 17 45	45 8	18 5	3 18 25	46 46	18 46	47 35	19 6	48 24	19 26	43 27	16		
22	42 40	17 5	43 29	17 26 44	18 17 46	45 7	18 6	2 18 26	46 45	18 47	47 34	19 7	48 23	19 27	43 26	16		
24	42 39	17 6	43 28	17 27 44	17 17 46	45 6	18 7	1 18 27	46 44	18 48	47 33	19 8	48 22	19 28	43 25	16		
26	42 38	17 7	43 27	17 27 44	16 17 47	45 5	18 8	0 18 28	46 43	18 49	47 32	19 9	48 21	19 29	43 24	16		
28	42 37	17 8	43 26	17 28 44	15 17 48	45 4	18 9	5 18 29	46 42	18 50	47 31	19 10	48 20	19 30	43 23	16		
30	42 36	17 9	43 25	17 29 44	14 17 49	45 3	18 10	4 18 30	46 41	18 51	47 30	19 11	48 19	19 31	43 22	16		
32	42 35	17 10	43 24	17 30 44	13 17 50	45 2	18 11	3 18 31	46 40	18 52	47 29	19 12	48 18	19 32	43 21	16		
34	42 34	17 11	43 23	17 30 44	11 17 51	45 0	18 11	2 18 32	46 39	18 53	47 28	19 13	48 17	19 33	43 20	16		
36	42 33	17 12	43 22	17 31 44	10 17 52	44 59	18 12	1 18 33	46 38	18 54	47 27	19 14	48 16	19 34	43 19	16		
38	42 32	17 13	43 21	17 32 44	9 17 53	44 58	18 13	0 18 34	46 37	18 55	47 26	19 15	48 15	19 35	43 18	16		
40	42 31	17 14	43 20	17 33 44	8 17 54	44 57	18 14	5 18 35	46 36	18 56	47 25	19 16	48 14	19 36	43 17	16		
42	42 30	17 15	43 19	17 34 44	7 17 55	44 56	18 15	4 18 36	46 35	18 57	47 24	19 17	48 13	19 37	43 16	16		
44	42 29	17 16	43 18	17 35 44	6 17 56	44 55	18 16	3 18 37	46 34	18 58	47 23	19 18	48 12	19 38	43 15	16		
46	42 28	17 17	43 17	17 36 44	5 17 57	44 54	18 17	2 18 38	46 33	18 59	47 22	19 19	48 11	19 39	43 14	16		
48	42 27	17 18	43 16	17 37 44	4 17 58	44 53	18 18	1 18 39	46 32	19 0	47 21	19 20	48 10	19 40	43 13	16		
50	42 26	17 19	43 15	17 38 44	3 17 59	44 52	18 19	0 18 40	46 31	19 1	47 20	19 21	48 9	19 41	43 12	16		
52	42 25	17 20	43 14	17 39 44	2 18 0	44 51	18 20	5 18 41	46 30	19 2	47 19	19 22	48 8	19 42	43 11	16		

(w.) The Correction of the Moon's Altitude, and the Aux. Angle A. (36° and 37°)

App. Alt.	Minutes of Moon's Hor. Parallax.																Seconds of H. P.	
	54'		55'		56'		57'		58'		59'		60'		61'			
	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°		
36°																		
0'	42 23	17 20	43 10	17 41	43 59	18 24	44 48	18 23	45 36	18 43	46 25	19 4	47 13	19 25	48 2	19 45	1	10
2	42 21	17 21	43 9	17 42	43 58	18 24	44 47	18 24	45 35	18 44	46 24	19 5	47 12	19 26	48 1	19 46	2	11
4	42 20	17 22	43 8	17 43	43 57	18 24	44 45	18 24	45 34	18 45	46 23	19 6	47 11	19 27	48 0	19 47	3	12
6	42 19	17 23	43 7	17 44	43 56	18 24	44 44	18 25	45 33	18 46	46 21	19 7	47 10	19 27	47 58	19 48	4	13
8	42 18	17 24	43 6	17 45	43 55	18 24	44 43	18 26	45 32	18 47	46 20	19 8	47 9	19 28	47 57	19 49	5	14
10	42 17	17 25	43 5	17 46	43 54	18 24	44 42	18 27	45 31	18 48	46 19	19 9	47 8	19 29	47 56	19 50	6	15
12	42 16	17 26	43 4	17 46	43 53	18 24	44 41	18 28	45 30	18 49	46 18	19 10	47 6	19 30	47 55	19 51	7	16
14	42 15	17 27	43 3	17 47	43 52	18 24	44 40	18 29	45 28	18 50	46 17	19 10	47 5	19 31	47 54	19 52	8	17
16	42 14	17 27	43 2	17 48	43 51	18 24	44 39	18 30	45 27	18 51	46 16	19 11	47 4	19 32	47 53	19 53	9	18
18	42 13	17 28	43 1	17 49	43 49	18 24	44 38	18 31	45 26	18 52	46 15	19 12	47 3	19 33	47 51	19 54	10	19
20	42 12	17 29	43 0	17 50	43 48	18 24	44 37	18 32	45 25	18 52	46 13	19 13	47 2	19 34	47 50	19 55	11	20
22	42 11	17 30	42 59	17 51	43 47	18 24	44 36	18 33	45 24	18 53	46 12	19 14	47 1	19 35	47 49	19 56	12	21
24	42 10	17 31	42 58	17 52	43 46	18 24	44 35	18 34	45 23	18 54	46 11	19 15	46 59	19 36	47 48	19 57	13	22
26	42 9	17 32	42 57	17 53	43 45	18 24	44 34	18 34	45 22	18 55	46 10	19 16	46 58	19 37	47 47	19 58	14	23
28	42 8	17 33	42 56	17 54	43 44	18 24	44 32	18 35	45 21	18 56	46 9	19 17	46 57	19 38	47 46	19 59	15	24
30	42 7	17 33	42 55	17 54	43 43	18 24	44 31	18 36	45 20	18 57	46 8	19 18	46 56	19 39	47 44	20	25	
32	42 6	17 34	42 54	17 55	43 42	18 24	44 30	18 37	45 18	18 58	46 7	19 19	46 55	19 40	47 43	20	26	
34	42 4	17 35	42 53	17 56	43 41	18 24	44 29	18 38	45 17	18 59	46 6	19 20	46 54	19 41	47 42	20	27	
36	42 3	17 36	42 52	17 57	43 40	18 24	44 28	18 39	45 16	19 0	46 5	19 21	46 53	19 42	47 41	20	28	
38	42 2	17 37	42 51	17 58	43 39	18 24	44 27	18 40	45 15	19 1	46 4	19 22	46 51	19 43	47 40	20	29	
40	42 1	17 38	42 50	17 59	43 38	18 24	44 26	18 41	45 14	19 2	46 3	19 23	46 50	19 44	47 38	20	30	
42	42 0	17 39	42 49	18 0	43 37	18 24	44 25	18 42	45 13	19 3	46 2	19 24	46 49	19 45	47 37	20	31	
44	41 59	17 40	42 48	18 1	43 36	18 24	44 24	18 43	45 12	19 4	46 1	19 25	46 48	19 47	47 36	20	32	
46	41 58	17 40	42 46	18 2	43 35	18 24	44 23	18 44	45 11	19 5	45 59	19 26	46 47	19 47	47 35	20	33	
48	41 57	17 41	42 45	18 3	43 33	18 24	44 22	18 44	45 10	19 6	45 58	19 27	46 46	19 48	47 34	20	34	
50	41 56	17 42	42 44	18 4	43 32	18 24	44 20	18 46	45 8	19 7	45 57	19 28	46 45	19 49	47 33	20	35	
52	41 55	17 43	42 43	18 5	43 31	18 24	44 19	18 46	45 7	19 8	45 55	19 28	46 43	19 50	47 31	20	36	
54	41 54	17 44	42 42	18 6	43 30	18 24	44 18	18 47	45 6	19 9	45 54	19 29	46 42	19 51	47 30	20	37	
56	41 53	17 45	42 41	18 7	43 29	18 24	44 17	18 48	45 5	19 10	45 53	19 30	46 41	19 52	47 29	20	38	
58	41 52	17 46	42 40	18 8	43 28	18 24	44 16	18 49	45 4	19 11	45 52	19 31	46 40	19 53	47 28	20	39	
37°																		
0'	41 51	17 46	42 39	18 9	43 27	18 24	44 15	18 50	45 3	19 12	45 51	19 32	46 39	19 53	47 27	20	40	
2	41 50	17 47	42 38	18 9	43 26	18 30	44 14	18 51	45 2	19 13	45 50	19 33	46 38	19 54	47 26	20	41	
4	41 49	17 48	42 37	18 9	43 25	18 31	44 13	18 52	45 1	19 14	45 49	19 34	46 37	19 55	47 24	20	42	
6	41 48	17 49	42 36	18 10	43 24	18 31	44 12	18 53	45 0	19 15	45 47	19 35	46 35	19 56	47 23	20	43	
8	41 47	17 50	42 35	18 11	43 23	18 32	44 11	18 54	44 58	19 16	45 46	19 36	46 34	19 57	47 22	20	44	
10	41 46	17 51	42 34	18 12	43 22	18 33	44 9	18 54	44 57	19 16	45 45	19 37	46 33	19 58	47 21	20	45	
12	41 45	17 52	42 33	18 13	43 20	18 34	44 8	18 55	44 56	19 17	45 44	19 38	46 32	19 59	47 20	20	46	
14	41 44	17 53	42 32	18 14	43 19	18 35	44 7	18 56	44 55	19 18	45 43	19 39	46 31	20 0	47 18	20	47	
16	41 43	17 53	42 30	18 15	43 18	18 36	44 6	18 57	44 54	19 18	45 42	19 40	46 29	20 1	47 17	20	48	
18	41 42	17 54	42 29	18 15	43 17	18 37	44 5	18 58	44 53	19 19	45 40	19 41	46 28	20 2	47 16	20	49	
20	41 41	17 55	42 28	18 16	43 16	18 38	44 4	18 59	44 51	19 20	45 39	19 41	46 27	20 3	47 15	20	50	
22	41 40	17 56	42 27	18 17	43 15	18 39	44 3	19 0	44 50	19 21	45 38	19 42	46 26	20 4	47 13	20	51	
24	41 38	17 57	42 26	18 18	43 14	18 40	44 2	19 1	44 49	19 22	45 37	19 43	46 25	20 5	47 12	20	52	
26	41 37	17 58	42 25	18 19	43 13	18 40	44 1	19 2	44 48	19 23	45 36	19 44	46 23	20 6	47 11	20	53	
28	41 36	17 58	42 24	18 20	43 12	18 41	43 59	19 3	44 47	19 24	45 35	19 45	46 22	20 7	47 10	20	54	
30	41 35	17 59	42 23	18 21	43 11	18 42	43 58	19 4	44 46	19 25	45 33	19 46	46 21	20 8	47 9	20	55	
32	41 34	18 0	42 22	18 22	43 10	18 43	43 57	19 5	44 45	19 26	45 32	19 47	46 20	20 9	47 7	20	56	
34	41 33	18 1	42 21	18 23	43 9	18 44	43 56	19 6	44 44	19 27	45 31	19 48	46 19	20 10	47 6	20	57	
36	41 32	18 2	42 20	18 23	43 8	18 45	43 55	19 7	44 42	19 28	45 30	19 49	46 18	20 11	47 5	20	58	
38	41 31	18 3	42 19	18 24	43 7	18 46	43 54	19 8	44 41	19 29	45 29	19 50	46 16	20 12	47 4	20	59	
40	41 30	18 4	42 18	18 25	43 6	18 46	43 53	19 9	44 40	19 29	45 28	19 51	46 15	20 13	47 3	20	60	
42	41 29	18 5	42 17	18 26	43 5	18 47	43 51	19 10	44 39	19 30	45 27	19 52	46 14	20 14	47 2	20	61	
44	41 28	18 6	42 16	18 28	43 4	18 48	43 50	19 11	44 38	19 31	45 25	19 53	46 13	20 15	47 1	20	62	
46	41 27	18 7	42 15	18 29	43 3	18 49	43 49	19 12	44 37	19 32	45 24	19 54	46 12	20 16	46 59	20	63	
48	41 26	18 8	42 14	18 30	43 2	18 50	43 48	19 13	44 36	19 33	45 23	19 55	46 10	20 17	46 58	20	64	
50	41 25	18 9	42 12	18 31	43 1	18 51	43 47	19 14	44 34	19 34	45 22	19 56	46 9	20 18	46 57	20	65	
52	41 24	18 10	42 11	18 33	42 58	18 52	43 46	19 15	44 33	19 35	45 21	19 56	46 8	20 19	46 56	20	66	
54	41 23	18 10	42 10	18 34	42 57	18 53	43 45	19 16	44 32	19 36	45 20	19 57	46 7	20 20	46 54	20	67	
56	41 22	18 10	42 9	18 35	42 56	18 54	43 44	19 17	44 31	19 37	45 18	19 58	46 6	20 21	46 53	20	68	
58	41 21	18 11	42 8	18 36	42 55	18 55	43 43	19 18	44 30	19 38	45 17	19 59	46 5	20 22	46 52	20	69	

(35° and 39°) The Correction of the Moon's Altitude, and the Aux. Angle A. (w.)

App. Alt.	Minutes of Moon's Hor. Parallax.														Seconds of H. P.			
	54'		55'		56'		57'		58'		59'		60'		61'		"	"
38°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	"	"
0'	41 19 18 12 42	7 18 34	42 54	18 55 43 41	19 17 44 29	19 39 45 16 30	0 46	3 20 22 46 51	20 43	1	1	0					1	0
2	41 18 18 13 43	8 18 36	42 53	18 56 43 40	19 18 44 28	19 39 45 16 20	1 48	2 20 23 46 49	20 44	2	2	1					2	1
4	41 17 18 14 43	5 18 36	42 52	18 57 43 39	19 19 44 26	19 40 45 14 20	2 46	1 20 24 46 48	20 45	3	3	2					3	2
6	41 16 18 15 43	3 18 36	42 51	18 58 43 38	19 20 44 25	19 41 45 12 20	3 46	0 20 25 46 47	20 46	4	4	3					4	3
8	41 15 18 16 43	2 18 37	42 50	18 59 43 37	19 21 44 24	19 42 45 11 20	4 45	58 20 26 46 46	20 47	5	5	4					5	4
10	41 14 18 16 42	1 18 39	42 48	19 0 43 36	19 21 44 23	19 43 45 10 20	5 45	57 20 27 46 44	20 48	6	6	5					6	5
12	41 13 18 17 42	0 18 39	42 47	19 1 43 34	19 22 44 22	19 44 45 9 20	6 45	56 20 27 46 43	20 49	7	7	6					7	6
14	41 12 18 18 41	59 18 40	42 46	19 1 43 33	19 23 44 20	19 45 45 8 20	7 45	55 20 28 46 42	20 50	8	8	7					8	7
16	41 11 18 19 41	58 18 41	42 45	19 2 43 32	19 24 44 19	19 46 45 6 20	8 45	54 20 29 46 41	20 51	9	9	8					9	8
18	41 10 18 20 41	57 18 41	42 44	19 3 43 31	19 25 44 18	19 47 45 5 20	9 45	53 20 30 46 39	20 52	10	10	9					10	9
20	41 9 18 20 41	56 18 42	42 43	19 4 43 30	19 26 44 17	19 48 45 4 20	10 45	51 20 31 46 38	20 53	11	11	10					11	10
22	41 8 18 21 41	55 18 43	42 42	19 5 43 29	19 27 44 16	19 48 45 3 20	10 45	50 20 32 46 37	20 54	12	12	11					12	11
24	41 6 18 23 41	53 18 44	42 41	19 6 43 28	19 28 44 15	19 49 45 2 20	11 45	49 20 33 46 36	20 55	13	13	12					13	12
26	41 5 18 23 41	52 18 45	42 39	19 7 43 26	19 29 44 13	19 50 45 0 20	12 45	47 20 34 46 34	20 56	14	14	13					14	13
28	41 4 18 24 41	51 18 46	42 38	19 8 43 25	19 30 44 12	19 51 44 59 20	13 45	46 20 35 46 33	20 57	15	15	14					15	14
30	41 3 18 25 41	50 18 47	42 37	19 9 43 24	19 30 44 11	19 52 44 58 20	14 45	45 20 36 46 32	20 58	16	16	15					16	15
32	41 2 18 26 41	49 18 47	42 36	19 10 43 23	19 31 44 10	19 53 44 57 20	15 45	44 20 37 46 31	20 59	17	17	16					17	16
34	41 1 18 26 41	48 18 48	42 35	19 10 43 22	19 32 44 9	19 54 44 56 20	16 45	43 20 38 46 30	21 0	18	18	17					18	17
36	41 0 18 27 41	47 18 49	42 34	19 11 43 21	19 33 44 8	19 55 44 54 20	17 45	41 20 39 46 28	21 1	19	19	18					19	18
38	40 59 18 28 41	46 18 50	42 33	19 12 43 20	19 34 44 6	19 56 44 53 20	18 45	40 20 40 46 27	21 2	20	20	19					20	19
40	40 58 18 29 41	45 18 51	42 31	19 13 43 18	19 35 44 5	19 57 44 52 20	18 45	39 20 40 46 26	21 3	21	21	20					21	20
42	40 57 18 30 41	44 18 52	42 30	19 14 43 17	19 36 44 4	19 58 44 51 20	19 45	38 20 41 46 25	21 4	22	22	21					22	21
44	40 56 18 31 41	42 18 53	42 29	19 15 43 16	19 36 44 3	19 58 44 50 20	20 45	37 20 42 46 23	21 5	23	23	22					23	22
46	40 55 18 31 41	41 18 53	42 28	19 15 43 15	19 37 44 2	19 59 44 48 20	21 45	36 20 43 46 22	21 6	24	24	23					24	23
48	40 53 18 32 41	40 18 54	42 27	19 16 43 14	19 38 44 0	20 0 44 47 20	22 45	35 20 44 46 21	21 7	25	25	24					25	24
50	40 52 18 33 41	39 18 55	42 26	19 17 43 13	19 39 43 59 20	1 44 46 20 23 45	33 20	45 46 20 21	7 33 26	26	26	25					26	25
52	40 51 18 34 41	38 18 56	42 25	19 18 43 11	19 40 43 58 20	2 44 46 20 24 45	33 20	46 46 18 21	8 34 27	27	27	26					27	26
54	40 50 18 36 41	37 18 57	42 24	19 19 43 10	19 41 43 57 20	3 44 44 20 25 45	33 20	47 46 17 21	9 35 28	28	28	27					28	27
56	40 49 18 36 41	36 18 58	42 22	19 20 43 9	19 42 43 56 20	4 44 42 20 26 45	33 20	48 46 16 21	10 36 29	29	29	28					29	28
58	40 48 18 37 41	35 18 59	42 21	19 21 43 8	19 43 43 55 20	5 44 41 20 27 45	33 20	49 46 15 21	11 37 30	30	30	29					30	29
39°	54'	55'	56'	57'	58'	59'	60'	61'										
0	40 47 18 37 41	33 18 59	42 20	19 21 43 7	19 44 43 54 20	6 44 40 20 28 45	27 20	50 46 13 21	12 38 31	31	31	30					31	30
2	40 46 18 38 41	32 19 0	42 19 19 22 43	6 19 44 43 53 20	7 44 39 20 29 45	26 20	51 46 12 21	13 39 32	32	32	32	31					32	31
4	40 45 18 39 41	31 19 1	42 18 19 23 43	4 19 45 43 51 20	7 44 38 20 30 45	24 20	52 46 11 21	14 40 33	33	33	33	32					33	32
6	40 44 18 40 41	30 19 2	42 17 19 24 43	3 19 46 43 50 20	8 44 37 20 31 45	23 20	53 46 10 21	15 41 34	34	34	34	33					34	33
8	40 42 18 41 41	29 19 3	42 16 19 25 43	2 19 47 43 49 20	9 44 36 20 32 45	22 20	54 46 9 21	16 42 35	35	35	35	34					35	34
10	40 41 18 42 41	28 19 4	42 15 19 26 43	1 19 48 43 47 20	10 44 35 20 33 45	21 20	55 46 8 21	17 43 36	36	36	36	35					36	35
12	40 40 18 43 41	27 19 5	42 14 19 27 43	0 19 49 43 46 20	11 44 34 20 34 45	20 20	56 46 7 21	18 44 37	37	37	37	36					37	36
14	40 39 18 43 41	26 19 6	42 13 19 28 43	5 42 19 50 43 45 20	12 44 33 20 35 45	19 20	57 46 6 21	19 45 38	38	38	38	37					38	37
16	40 38 18 44 41	24 19 6	42 11 19 28 42 57	5 51 43 44 20 19	13 44 32 20 36 45	17 20	57 46 5 21	20 46 39	39	39	39	38					39	38
18	40 37 18 45 41	23 19 7	42 10 19 29 42 56	5 51 43 43 20 14	14 44 31 20 37 45	16 20	58 46 4 21	21 47 40	40	40	40	39					40	39
20	40 36 18 46 41	22 19 8	42 9 19 30 42 55	5 52 43 41 20 15	15 44 30 20 38 45	14 20	59 46 3 21	22 48 41	41	41	41	40					41	40
22	40 35 18 47 41	21 19 9	42 7 19 31 42 54	5 53 43 40 20 15	16 44 29 20 39 45	13 20	60 46 2 21	23 49 42	42	42	42	41					42	41
24	40 33 18 47 41	20 19 10	42 5 19 32 42 53	5 54 43 39 20 16	17 44 28 20 40 45	12 20	61 46 1 21	24 50 43	43	43	43	42					43	42
26	40 32 18 48 41	19 19 10	42 3 19 33 42 51	5 55 43 38 20 17	18 44 27 20 41 45	11 20	62 46 0 21	25 51 44	44	44	44	43					44	43
28	40 31 18 49 41	18 19 11	42 1 19 34 42 50	5 56 43 37 20 18	19 44 26 20 42 45	10 20	63 45 59 21	26 52 45	45	45	45	44					45	44
30	40 30 18 50 41	18 19 12	42 0 19 34 42 49	5 57 43 35 20 19	20 44 25 20 43 45	9 20	64 45 58 21	27 53 46	46	46	46	45					46	45
32	40 29 18 51 41	15 19 13	42 35 42 48 19 58 43 34 20	44 20 20 42 45	7 21	5 45 53 21	27	54 45 57 21	27	47	45						47	45
34	40 28 18 52 41	14 19 14	42 0 36 42 47 19 58 43 33 20	44 19 20 43 45	6 21	5 46 52 21	28	55 45 56 21	28	48	46						48	46
36	40 27 18 53 41	13 19 15	41 59 37 42 46 19 59 43 32 20	22 44 18 20 44 45	4 21	6 45 51 21	29	56 45 55 21	29	49	47						49	47
38	40 26 18 53 41	12 19 16	41 58 38 42 44 20 0 43 31 20 23 44	17 20 45 45	3 21	7 45 49 21	30	57 45 54 21	30	50	48						50	48
40	40 25 18 54 41	11 19 16	41 57 39 42 43 20 1 43 29 20 23 44	16 20 46 45	2 21	8 45 48 21	31	58 45 53 21	31	51	49						51	49
42	40 23 18 55 41	10 19 17	41 56 40 42 42 20 2 43 28 20 24 44	13 20 47 45	0 21	9 45 47 21	32	59 45 52 21	32	52	50						52	50
44	40 22 18 56 41	9 19 18	41 54 40 42 41 20 3 43 27 20 25 44	13 20 48 44 59 21	10 45 46 21	32	0 46 46 21	33	53	51	51						53	51
46	40 21 18 56 41	7 19 19	41 53 41 42 40 20 4 43 26 20 26 44	12 20 49 44 58 21	11 45 44 21	33	0 47 45 21	34	54	52	52						54	52
48	40 20 18 57 41	6 19 20	41 52 42 42 38 20 5 43 25 20 27 44	11 20 49 44 57 21	12 45 43 21	34	0 48 44 21	35	55	53	53						55	53
50	40 19 18 58 41	5 19 21	41 51 43 42 37 20 6 43 24 20 28 44	9 20 50 44 56 21	13 45 42 21	35	0 49 43 21	36	56	54	54						56	54
52	40 18 18 59 41	4 19 21	41 50 44 42 36 20 6 43 22 20 29 44	8 20 51 44 54 21	14 45 41 21	36	0 50 42 21	37	57	55	55						57	55
54	40 17 19 0 41	3 19 22	41 49 45 42 35 20 7 43 21 20 30 44	7 20 52 44 53 21	15 45 39 21	37	0 51 41 21	38	58	56	56						58	56
56	40 16 19 1 41	2 19 23	41 48 46 42 34 20 8 43 20 20 31 44															

(w) 'The Correction of the Moon's Altitude, and the Aux. Angle A. (40' and 41																	
Minutes of Moon's Hor. Parallax.																	
App Alt.	54'		55'		56'		57'		58'		59'		60'		61'		
40'	Corr. +	A 60"	Corr. +	A 60"	Corr. +	A 60"	Corr. +	A 60"	Corr. +	A 60"	Corr. +	A 60"	Corr. +	A 60"	Corr. +	A 60"	
0'	40 13 19	2 40 50	10 25	41 45	19 47	42 31	30 10	43 17	20 32	44 5	30 55	44 49	21 17	45 35	21 40		1
2	40 12 19	3 40 50	19 26	41 44	19 40	42 30	26 11	43 16	20 33	44 2	30 56	44 48	21 18	45 34	21 41		2
4	40 11 19	4 40 57	19 26	41 43	19 43	42 29	20 12	43 15	20 34	44 1	30 57	44 47	21 19	45 33	21 42		3
6	40 10 19	5 40 56	19 27	41 42	19 50	42 28	20 13	43 14	20 35	43 59	30 58	44 45	21 20	45 31	21 43		4
8	40 9 19	6 40 55	19 28	41 41	19 51	42 27	20 13	43 13	20 36	43 58	30 58	44 44	21 21	45 30	21 44		5
10	40 8 19	7 40 54	19 29	41 39	19 52	42 25	20 14	43 11	20 37	43 57	30 59	44 43	21 22	45 29	21 45		6
12	40 6 19	7 40 52	19 30	41 38	19 52	42 24	20 15	43 10	20 38	43 56	21 0 44	42 21	23 45	27 21	46		7
14	40 5 19	8 40 51	19 31	41 37	19 53	42 23	20 16	43 9	20 39	43 54	21 1 44	40 21	24 45	26 21	46		8
16	40 4 19	9 40 50	19 32	41 36	19 54	42 22	20 17	43 7	20 39	43 53	21 2 44	30 21	25 45	25 21	47		9
18	40 3 19	10 40 49	19 32	41 35	19 55	42 20	20 18	43 6	20 40	43 52	21 3 44	30 21	26 45	24 21	48		10
20	40 2 19	10 40 48	19 33	41 33	19 56	42 19	20 18	43 5	20 41	43 51	21 4 44	36 21	26 45	22 21	49		11
22	40 1 19	11 40 47	19 34	41 32	19 57	42 18	20 19	43 4	20 42	43 49	21 5 44	35 21	27 45	21 21	50		12
24	40 0 19	12 40 45	19 35	41 31	19 57	42 17	20 20	43 3	20 43	43 48	21 6 44	34 21	28 45	20 21	51		13
26	39 58 19	13 40 44	19 36	41 30	19 58	42 16	20 21	43 2	20 44	43 47	21 7 44	33 21	29 45	19 21	52		14
28	39 57 19	14 40 43	19 36	41 29	19 59	42 14	20 22	43 1	20 45	43 46	21 8 44	31 21	30 45	17 21	53		15
30	39 56 19	15 40 42	19 37	41 27	20 0	42 13	20 23	42 59	20 46	43 44	21 9 44	30 21	31 45	16 21	54		16
32	39 55 19	15 40 41	19 38	41 26	20 0	42 12	20 24	42 58	20 46	43 43	21 9 44	29 21	32 45	14 21	55		17
34	39 54 19	16 40 40	19 39	41 25	20 0	42 11	20 25	42 56	20 47	43 42	21 10 44	28 21	33 45	13 21	56		18
36	39 53 19	17 40 38	19 40	41 24	20 0	42 10	20 25	42 55	20 48	43 41	21 11 44	26 21	34 45	12 21	57		19
38	39 52 19	18 40 37	19 41	41 23	20 0	42 9	20 26	42 54	20 49	43 40	21 12 44	25 21	35 45	10 21	58		20
40	39 50 19	19 40 36	19 41	41 22	20 0	42 7	20 27	42 53	20 50	43 39	21 13 44	24 21	36 45	9 21	59		21
42	39 49 19	19 40 35	19 42	41 20	20 0	42 6	20 28	42 51	20 51	43 37	21 14 44	22 21	37 45	8 21	59		22
44	39 48 19	20 40 34	19 43	41 19	20 0	42 5	20 29	42 50	20 52	43 36	21 14 44	21 21	38 45	7 21	59		23
46	39 47 19	21 40 33	19 44	41 18	20 0	42 3	20 30	42 49	20 53	43 34	21 15 44	20 21	39 45	6 21	59		24
48	39 46 19	22 40 31	19 45	41 17	20 0	42 2	20 31	42 48	20 53	43 33	21 16 44	19 21	39 45	4 21	59		25
50	39 45 19	23 40 30	19 46	41 16	20 0	42 1	20 31	42 46	20 54	43 32	21 17 44	17 21	40 45	3 21	59		26
52	39 44 19	24 40 29	19 46	41 14	20 0	42 0	20 32	42 45	20 56	43 31	21 18 44	16 21	41 45	1 21	59		27
54	39 43 19	24 40 28	19 47	41 13	20 0	41 59	20 33	42 44	20 56	43 29	21 19 44	15 21	42 45	0 21	59		28
56	39 41 19	25 40 27	19 48	41 12	20 0	41 57	20 34	42 43	20 57	43 28	21 20 44	13 21	43 45	59 21	59		29
58	39 40 19	26 40 26	19 49	41 11	20 0	41 56	20 35	42 41	20 58	43 27	21 21 44	12 21	44 45	57 21	59		30
41'	54'	55'	56'	57'	58'	59'	60'	61'									
0'	39 38 19	27 40 24	19 50	41 10	20 0	41 55	20 36	42 40	20 59	43 25	21 22 44	11 21	45 44	56 21	59		31
2	39 38 19	28 40 23	19 51	41 8	20 0	41 54	20 37	42 39	21 0	43 24	21 23 44	9 21	46 44	55 21	59		32
4	39 37 19	29 40 22	19 51	41 7	20 0	41 52	20 37	42 38	21 0	43 23	21 23 44	8 21	46 44	53 21	59		33
6	39 36 19	29 40 21	19 52	41 6	20 0	41 51	20 38	42 36	21 1	43 22	21 24 44	7 21	47 44	52 21	59		34
8	39 34 19	30 40 20	19 53	41 5	20 0	41 50	20 39	42 35	21 1	43 20	21 25 44	6 21	48 44	51 21	59		35
10	39 33 19	31 40 19	19 54	41 4	20 0	41 49	20 40	42 34	21 1	43 19	21 26 44	4 21	49 44	49 21	59		36
12	39 32 19	32 40 17	19 55	41 2	20 0	41 47	20 41	42 33	21 1	43 18	21 27 44	3 21	50 44	48 21	59		37
14	39 31 19	32 40 16	19 56	41 1	20 0	41 46	20 42	42 31	21 1	43 16	21 28 44	2 21	51 44	47 21	59		38
16	39 30 19	33 40 15	19 56	41 0	20 0	41 45	20 43	42 30	21 1	43 15	21 29 44	0 21	52 44	45 21	59		39
18	39 28 19	34 40 14	19 57	40 59	20 0	41 44	20 43	42 29	21 1	43 14	21 30 44	59 21	53 44	44 21	59		40
20	39 27 19	35 40 12	19 58	40 57	20 0	41 42	20 44	42 27	21 1	43 13	21 30 44	58 21	54 44	43 21	59		41
22	39 26 19	36 40 11	19 59	40 56	20 0	41 41	20 45	42 26	21 1	43 11	21 31 44	57 21	55 44	41 21	59		42
24	39 25 19	37 40 10	19 59	40 55	20 0	41 40	20 46	42 25	21 1	43 10	21 32 44	55 21	56 44	40 21	59		43
26	39 24 19	37 40 9	19 59	40 54	20 0	41 39	20 47	42 24	21 1	43 9	21 33 44	54 21	56 44	39 21	59		44
28	39 23 19	38 40 8	19 59	40 52	20 0	41 38	20 48	42 22	21 1	43 7	21 34 44	53 21	57 44	37 21	59		45
30	39 21 19	39 40 6	19 59	40 51	20 0	41 36	20 49	42 21	21 1	43 6	21 35 44	51 21	58 44	36 21	59		46
32	39 20 19	40 40 5	19 59	40 50	20 0	41 35	20 49	42 20	21 1	43 5	21 36 44	50 21	59 44	35 21	59		47
34	39 19 19	41 40 4	19 59	40 49	20 0	41 34	20 50	42 19	21 1	43 4	21 37 44	48 21	59 44	33 21	59		48
36	39 18 19	41 40 3	19 59	40 48	20 0	41 33	20 51	42 17	21 1	43 3	21 38 44	47 21	59 44	32 21	59		49
38	39 17 19	42 40 2	19 59	40 47	20 0	41 31	20 52	42 16	21 1	43 2	21 39 44	46 21	59 44	31 21	59		50
40	39 16 19	43 40 1	19 59	40 46	20 0	41 30	20 53	42 15	21 1	43 1	21 40 44	45 21	59 44	30 21	59		51
42	39 14 19	44 39 59	19 59	40 44	20 0	41 29	20 54	42 14	21 1	42 58	21 40 44	43 21	59 44	28 21	59		52
44	39 13 19	45 39 58	19 59	40 43	20 0	41 28	20 54	42 13	21 1	42 57	21 41 44	43 21	59 44	27 21	59		53
46	39 12 19	45 39 57	19 59	40 42	20 0	41 26	20 55	42 11	21 1	42 56	21 42 44	41 21	59 44	25 21	59		54
48	39 11 19	46 39 56	19 59	40 40	20 0	41 25	20 56	42 10	21 1	42 55	21 43 44	40 21	59 44	24 21	59		55
50	39 10 19	47 39 54	19 59	40 39	20 0	41 24	20 57	42 9	21 1	42 53	21 44 44	38 21	59 44	23 21	59		56
52	39 9 19	48 39 53	19 59	40 38	20 0	41 23	20 58	42 7	21 1	42 52	21 45 44	37 21	59 44	22 21	59		57
54	39 7 19	49 39 52	19 59	40 37	20 0	41 21	20 59	42 6	21 1	42 51	21 46 44	35 21	59 44	20 21	59		58
56	39 6 19	50 39 51	19 59	40 36	20 0	41 20	21 0	42 5	21 1	42 50	21 47 44	34 21	59 44	19 21	59		59
58	39 5 19	50 39 50	19 59	40 34	20 0	41 19	21 0	42 4	21 1	42 49	21 48 44	33 21	59 44	17 21	59		60

(w.) The Correction of the Moon's Altitude, and the Aux. Angle A. (44° and 45°)

App Alt.		Minutes of Moon's Hor. Parallax.												H P																			
		54'		55'		56'		57'		58'		59'				60'		61'															
44	+	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A																
		+	60"	+	60"	+	60"	+	60"	+	60"	+	60"	+	60"	+	60"																
0	37	51	20	38	38	34	81	4	30	17	21	20	40	1	21	55	40	44	22	21	41	27	22	47	42	10	23	13	42	53	23	38	
2	37	50	20	38	38	32	21	5	30	16	21	30	39	58	21	54	40	42	22	22	41	26	29	47	43	9	23	13	42	52	23	39	
4	37	49	20	38	38	30	21	5	30	15	21	31	39	58	21	57	40	41	22	22	41	24	24	48	43	7	23	14	42	50	23	38	
6	37	47	20	38	38	28	21	6	30	14	21	32	39	57	21	57	40	40	22	22	41	23	22	48	42	6	23	14	42	49	23	40	
8	37	46	20	38	38	26	21	7	30	12	21	32	38	55	21	58	40	38	22	22	41	21	21	49	42	5	23	15	42	48	23	40	
10	37	45	20	38	38	24	21	7	30	11	21	33	39	54	21	59	40	37	22	24	41	20	20	50	42	3	23	15	42	46	23	41	
12	37	44	20	38	38	22	21	8	30	10	21	34	39	53	21	59	40	36	22	25	41	19	21	50	42	2	23	16	42	45	23	41	
14	37	42	20	38	38	20	21	9	30	8	21	34	39	51	22	6	40	34	22	25	41	17	22	51	42	0	23	16	42	43	23	42	
16	37	41	20	38	38	18	21	10	30	7	21	35	39	50	22	1	40	33	22	26	41	16	22	51	41	50	23	17	42	42	23	42	
18	37	40	20	38	38	16	21	11	30	6	21	36	39	49	22	1	40	32	22	27	41	15	22	52	41	50	23	17	42	41	23	43	
20	37	39	20	38	38	14	21	11	30	4	21	36	39	47	22	2	40	30	22	27	41	13	22	53	41	56	23	18	42	40	23	43	
22	37	37	20	38	38	12	21	12	30	3	21	37	39	46	22	3	40	29	22	28	41	12	22	53	41	55	23	18	42	38	23	44	
24	37	36	20	38	38	10	21	12	30	2	21	38	39	45	22	3	40	28	22	29	41	10	22	54	41	53	23	19	42	37	23	44	
26	37	35	20	38	38	8	21	13	30	1	21	39	39	43	22	4	40	26	22	29	41	9	22	54	41	52	23	20	42	35	23	45	
28	37	34	20	38	38	6	21	14	30	0	21	40	39	42	22	5	40	25	22	30	41	8	22	55	41	51	23	20	42	33	23	45	
30	37	32	20	38	38	4	21	15	30	0	21	40	39	41	22	5	40	24	22	30	41	6	22	56	41	49	23	21	42	32	23	46	
32	37	31	20	38	38	2	21	16	30	0	21	41	39	39	22	6	40	22	22	31	41	6	22	56	41	48	23	21	42	31	23	46	
34	37	30	20	38	38	0	21	16	30	0	21	41	39	38	22	7	40	21	22	32	41	4	22	57	41	46	23	22	42	29	23	47	
36	37	29	20	38	38	0	21	17	30	0	21	42	39	37	22	7	40	19	22	32	41	2	22	57	41	45	23	22	42	28	23	48	
38	37	27	20	38	38	0	21	18	30	0	21	43	39	36	22	8	40	18	22	33	41	1	22	58	41	44	23	23	42	26	23	48	
40	37	26	20	38	38	0	21	18	30	0	21	43	39	34	22	8	40	17	22	33	40	50	22	58	41	42	23	24	42	25	23	49	
42	37	25	20	38	38	0	21	19	30	0	21	44	39	33	22	9	40	15	22	34	40	50	22	59	41	41	23	24	42	23	23	49	
44	37	24	20	38	38	0	21	20	30	0	21	45	39	32	22	10	40	14	22	35	40	50	23	0	41	30	23	25	42	22	23	50	
46	37	22	20	38	38	0	21	21	30	0	21	46	39	30	22	11	40	13	22	35	40	50	23	0	41	30	23	25	42	21	23	50	
48	37	21	20	38	38	0	21	21	30	0	21	46	39	29	22	11	40	11	22	36	40	54	23	1	41	27	23	26	42	19	23	51	
50	37	20	20	38	38	0	21	22	30	0	21	47	39	28	22	12	40	10	22	37	40	53	23	2	41	25	23	26	42	18	23	51	
52	37	19	20	38	38	0	21	23	30	0	21	48	39	26	22	13	40	9	22	37	40	51	23	2	41	24	23	27	42	16	23	52	
54	37	17	20	38	38	0	21	24	30	0	21	48	38	24	22	13	40	7	22	38	40	50	23	3	41	22	23	28	42	15	23	53	
56	37	16	20	38	38	0	21	25	30	0	21	49	39	24	22	14	40	6	22	39	40	49	23	3	41	21	23	28	42	14	23	53	
58	37	15	20	38	38	0	21	25	30	0	21	50	39	22	22	15	40	5	22	39	40	47	23	4	41	20	23	29	42	12	23	53	
45	54'	55'	56'	57'	58'	59'	60'	61'																									
0	37	14	21	1	37	56	21	26	38	38	21	50	39	21	22	15	40	3	22	40	40	46	23	5	41	28	23	29	42	11	23	54	
2	37	12	21	2	37	55	21	27	38	37	21	51	30	20	22	16	40	2	22	41	40	44	23	5	41	27	30	30	42	9	23	55	
4	37	11	21	3	37	53	21	27	38	36	21	52	30	18	22	17	40	1	22	42	40	43	23	6	41	26	25	31	42	8	23	56	
6	37	10	21	4	37	52	21	28	38	35	21	53	30	17	22	18	39	50	22	42	40	42	23	7	41	24	23	32	42	6	23	57	
8	37	8	21	5	37	51	21	29	38	33	21	54	30	15	22	19	38	50	22	43	40	40	23	8	41	23	23	33	42	5	23	57	
10	37	7	21	6	37	49	21	30	38	32	21	54	30	14	22	19	39	50	22	44	40	39	23	9	41	21	23	33	42	3	23	58	
12	37	6	21	7	37	48	21	30	38	31	21	55	30	13	22	20	39	55	22	45	40	37	23	10	41	20	23	34	42	2	23	59	
14	37	5	21	8	37	47	21	31	38	29	21	56	30	11	22	21	39	54	22	46	40	36	23	10	41	18	23	35	42	0	24	0	
16	37	3	21	9	37	46	21	32	38	28	21	57	30	10	22	22	39	52	22	46	40	35	23	11	41	17	23	36	41	50	24	1	
18	37	2	21	10	37	44	21	33	38	27	21	58	30	9	22	22	39	51	22	47	40	33	23	12	41	15	23	37	41	50	24	2	
20	37	1	21	11	37	43	21	33	38	25	21	58	30	7	22	23	39	49	22	48	40	32	23	13	41	14	23	38	41	50	24	3	
22	37	0	21	12	37	42	21	34	38	24	21	59	30	6	22	24	39	48	22	49	40	30	23	14	41	12	23	39	41	55	24	3	
24	36	58	21	10	37	40	21	35	38	23	22	0	30	5	22	25	39	47	22	50	40	29	23	15	41	11	23	39	41	55	24	4	
26	36	57	21	11	37	39	21	36	38	21	22	1	30	3	22	26	39	45	22	50	40	27	23	15	41	10	23	40	41	50	24	5	
28	36	56	21	12	37	38	21	37	38	20	22	1	30	2	22	26	39	44	22	51	40	26	23	16	41	9	23	41	41	50	24	6	
30	36	54	21	13	37	37	21	37	38	18	22	2	30	1	22	27	39	43	22	52	40	25	23	17	41	7	23	42	41	49	24	7	
32	36	53	21	13	37	35	21	38	38	17	22	3	30	0	22	28	39	41	22	53	40	23	23	18	41	5	23	43	41	47	24	8	
34	36	52	21	14	37	34	21	39	38	16	22	4	30	0	22	29	39	40	22	54	40	22	23	19	41	4	23	44	41	46	24	9	
36	36	51	21	15	37	33	21	40	38	15	22	5	30	0	22	30	39	39	22	54	40	20	23	19	41	2	23	44	41	44	24	9	
38	36	49	21	16	37	31	21	40	38	13	22	6	30	0	22	31	39	37	22	55	40	19	23	20	41	1	23	45	41	43	24	10	
40	36	48	21	16	37	30	21	41	38	12	22	6	30	0	22	31	39	36	22	56	40	18	23	21	41	0	23	46	41	42	24	11	
42	36	47	21	17	37	29																											

(46° and 47°) The Correction of the Moon's Altitude, and the Aux. Angle A.																	(w.)	
App Alt.	Minutes of Moon's Hor. Parallax.														Seconds of H. P.			
	54'		55'		56'		57'		58'		59'		60'		61'		S	A
	Corr. +	A 60"	Corr. +	A 60"	Corr. +	A 60"	Corr. +	A 60"	Corr. +	A 60"	Corr. +	A 60"	Corr. +	A 60"				
46	36 35 21 34 37 17	21 49	37 59 22 14 38 40	22 39 39 22	23 4 40	4 23 29	40 45 23 55	41 27 24 20									1	0
2	36 34 21 34 37 16	21 50	37 57 22 15 38 39	23 40 39 21	23 5 40	2 23 30	40 44 23 56	41 26 24 21									2	1
4	36 33 21 35 37 14	21 50	37 56 22 16 38 38	23 41 39 19	23 6 40	1 23 31	40 42 23 56	41 24 24 21									3	2
6	36 31 21 36 37 13	21 51	37 56 22 16 38 36	23 41 39 18	23 7 39	59 23 32	40 41 23 57	41 23 24 22									4	3
8	36 30 21 37 37 12	21 52	37 53 22 17 38 35	23 42 39 16	23 7 39	58 23 33	40 40 23 58	41 21 24 23									5	4
10	36 28 21 37 37 10	21 53	37 52 22 18 38 33	23 43 39 15	23 8 39	57 23 33	40 38 23 59	41 20 24 24									6	5
12	36 27 21 28 37 9	21 53	37 51 22 19 38 32	23 44 39 14	23 9 39	55 23 34	40 37 24	0 41 18 24 25									7	6
14	36 26 21 29 37 8	21 54	37 49 22 19 38 31	23 45 39 12	23 10 39	54 23 35	40 35 24	0 41 17 24 26									8	7
16	36 25 21 30 37 6	21 55	37 48 22 20 38 29	23 45 39 11	23 11 39	52 23 36	40 34 24	1 41 15 24 26									9	8
18	36 23 21 30 37 5	21 56	37 46 22 21 38 28	23 46 39 9	23 11 39	51 23 37	40 32 24	2 41 14 24 27									10	9
20	36 22 21 31 37 4	21 56	37 45 22 22 38 26	23 47 39 8	23 12 39	49 23 37	40 31 24	3 41 12 24 28									11	10
22	36 21 21 32 37 2	21 57	37 44 22 22 38 25	23 48 39 7	23 13 39	48 23 38	40 29 24	4 41 11 24 29									12	11
24	36 20 21 33 37 1	21 58	37 42 22 23 38 24	23 48 39 6	23 14 39	47 23 39	40 28 24	4 41 9 24 30									13	12
26	36 18 21 33 37 0	21 58	37 41 22 24 38 22	23 49 39 4	23 15 39	45 23 40	40 26 24	5 41 8 24 30									14	13
28	36 17 21 34 36 58	21 59	37 40 22 25 38 21	23 50 39 2	23 15 39	44 23 41	40 25 24	6 41 6 24 31									15	14
30	36 16 21 35 36 57	22 0	37 38 22 25 38 20	23 51 39 0	23 16 39	42 23 41	40 23 24	7 41 5 24 32									16	15
32	36 14 21 36 36 56	22 0	37 37 22 26 38 18	23 52 38 59	23 17 39	41 23 42	40 22 24	8 41 3 24 33									17	16
34	36 13 21 36 36 54	22 1	37 36 22 27 38 17	23 52 38 58	23 18 39	39 23 43	40 21 24	8 41 2 24 34									18	17
36	36 12 21 37 36 53	22 1	37 34 22 28 38 15	23 53 38 57	23 18 39	38 23 44	40 19 24	9 41 0 24 35									19	18
38	36 10 21 38 36 52	22 2	37 33 22 29 38 14	23 54 38 55	23 19 39	36 23 45	40 18 24	10 40 59 24 36									20	19
40	36 9 21 38 36 50	22 2	37 31 22 29 38 13	23 55 38 54	23 20 39	35 23 45	40 16 24	11 40 57 24 36									21	20
42	36 8 21 39 36 49	22 3	37 30 22 30 38 11	23 56 38 52	23 21 39	34 23 46	40 15 24	12 40 56 24 37									22	21
44	36 6 21 40 36 48	22 3	37 29 22 31 38 10	23 56 38 51	23 22 39	32 23 47	40 13 24	13 40 54 24 38									23	22
46	36 5 21 41 36 46	22 3	37 27 22 32 38 9	23 57 38 50	23 22 39	31 23 48	40 12 24	13 40 53 24 39									24	23
48	36 4 21 41 36 45	22 3	37 26 22 32 38 8	23 58 38 48	23 23 39	30 23 49	40 10 24	14 40 51 24 40									25	24
50	36 3 21 42 36 44	22 3	37 25 22 33 38 6	23 58 38 47	23 24 39	28 23 49	40 9 24	15 40 50 24 41									26	25
52	36 1 21 43 36 42	22 3	37 23 22 34 38 5	23 59 38 45	23 25 39	26 23 50	40 7 24	16 40 49 24 41									27	26
54	36 0 21 44 36 41	22 3	37 22 22 35 38 3	23 59 38 44	23 26 39	25 23 51	40 6 24	17 40 47 24 42									28	27
56	35 59 21 44 36 40	22 3	37 21 22 35 38 2	23 59 38 43	23 26 39	24 23 52	40 5 24	17 40 46 24 43									29	28
58	35 57 21 45 36 38	22 3	37 19 22 36 38 0	23 59 38 41	23 27 39	22 23 53	40 3 24	18 40 44 24 44									30	29
47	35 56 21 46 36 37	22 1	37 18 22 37 37 59	23 59 38 40	23 28 39	21 23 53	40 2 24	19 40 43 24 44									31	30
0	35 55 21 47 36 36	22 1	37 17 22 38 37 57	23 59 38 38	23 28 39	20 23 54	40 1 24	20 40 41 24 45									32	31
2	35 53 21 47 36 34	22 1	37 15 22 38 37 56	23 59 38 37	23 29 39	18 23 55	39 59 24	21 40 40 24 46									33	32
4	35 52 21 48 36 33	22 1	37 14 22 39 37 55	23 59 38 36	23 30 39	16 23 56	39 57 24	21 40 38 24 47									34	33
6	35 51 21 49 36 32	22 1	37 12 22 40 37 53	23 59 38 34	23 31 39	16 23 57	39 56 24	22 40 37 24 48									35	34
8	35 49 21 49 36 30	22 1	37 11 22 41 37 52	23 59 38 33	23 32 39	13 23 58	39 54 24	23 40 35 24 49									36	35
10	35 48 21 50 36 29	22 1	37 10 22 41 37 50	23 59 38 31	23 33 39	12 23 58	39 53 24	24 40 34 24 50									37	36
12	35 47 21 51 36 28	22 1	37 8 22 42 37 49	23 59 38 30	23 33 39	11 23 59	39 51 24	25 40 32 24 50									38	37
14	35 45 21 52 36 26	22 1	37 7 22 43 37 48	23 59 38 28	23 34 39	9 24 0	39 50 24	26 40 31 24 51									39	38
16	35 44 21 52 36 25	22 1	37 5 22 44 37 46	23 59 38 27	23 35 39	8 24 1	39 48 24	27 40 29 24 52									40	39
18	35 43 21 53 36 23	22 1	37 4 22 44 37 45	23 59 38 25	23 36 39	6 24 2	39 47 24	27 40 27 24 53									41	40
20	35 41 21 54 36 22	22 1	37 2 22 45 37 43	23 59 38 24	23 37 39	5 24 3	39 45 24	28 40 26 24 54									42	41
22	35 40 21 55 36 21	22 1	37 1 22 46 37 42	23 59 38 23	23 37 39	3 24 4	39 44 24	29 40 24 24 55									43	42
24	35 38 21 55 36 19	22 1	37 0 22 47 37 41	23 59 38 21	23 38 39	2 24 5	39 42 24	30 40 23 24 56									44	43
26	35 37 21 56 36 18	22 1	36 59 22 47 37 39	23 59 38 20	23 39 39	0 24 6	39 41 24	30 40 21 24 56									45	44
28	35 36 21 57 36 17	22 2	36 57 22 48 37 38	23 59 38 18	23 40 39	59 24	39 39 24	31 40 20 24 57									46	45
30	35 35 21 57 36 15	22 2	36 56 22 49 37 36	23 59 38 17	23 40 39	57 24	39 38 24	32 40 18 24 58									47	46
32	35 33 21 58 36 14	22 2	36 55 22 50 37 35	23 59 38 15	23 41 39	56 24	39 37 24	33 40 17 24 58									48	47
34	35 32 21 59 36 13	22 2	36 53 22 50 37 34	23 59 38 14	23 42 39	55 24	39 35 24	34 40 15 24 59									49	48
36	35 31 21 60 36 12	22 2	36 52 22 51 37 32	23 59 38 13	23 43 39	53 24	39 34 24	34 40 14 25 0									50	49
38	35 29 21 61 36 10	22 2	36 50 22 52 37 31	23 59 38 11	23 43 39	52 24	39 33 24	35 40 12 25 0									51	50
40	35 28 21 62 36 9	22 2	36 49 22 53 37 29	23 59 38 10	23 44 39	50 24	39 31 24	36 40 11 25 0									52	51
42	35 27 21 63 36 8	22 2	36 48 22 53 37 28	23 59 38 9	23 45 39	49 24	39 29 24	37 40 9 25 0									53	52
44	35 26 21 64 36 7	22 2	36 46 22 54 37 27	23 59 38 8	23 46 39	47 24	39 28 24	37 40 8 25 0									54	53
46	35 24 21 65 36 5	22 2	36 45 22 55 37 25	23 59 38 7	23 47 39	46 24	39 26 24	38 40 6 25 0									55	54
48	35 23 21 66 36 4	22 2	36 43 22 56 37 24	23 59 38 6	23 48 39	44 24	39 25 24	39 40 5 25 0									56	55
50	35 22 21 67 36 3	22 2	36 42 22 56 37 22	23 59 38 5	23 49 39	43 24	39 23 24	40 40 3 25 0									57	56
52	35 20 21 68 36 2	22 2	36 41 22 57 37 21	23 59 38 4	23 49 39	41 24	39 22 24	41 40 2 25 0									58	57
54	35 19 21 69 36 1	22 2	36 39 22 58 37 20	23 59 38 3	23 50 39	40 24	39 20 24	41 40 0 25 0									59	58
56	35 18 21 70 36 0	22 2	36 38 22 59 37 18	23 59 38 2	23 50 39	38 24	39 19 24	42 40 59 25 0									60	59

(w.)		The Correction of the Moon's Altitude, and the Aux. Angle A. (45° and 49°)																Seconds of H P	
App Alt	Minutes of Moon's Hor. Parallax.																A	C	
	54'	55'	56'	57'	58'	59'	60'	61'	54'	55'	56'	57'	58'	59'	60'	61'			
48	Corr +	A 60°	Corr +	A 60°	Corr +	A 60°	Corr +	A 60°	Corr +	A 60°	Corr +	A 60°	Corr +	A 60°	Corr +	A 60°			
0	35 16 22	8 35 56	22 33	36 37	32 59	37 17	23 26	37 57	23 51	36 37	24 17	39 17	24 43	39 57	25 9		1	0	
2	35 15 22	8 35 55	22 34	36 35	32 59	37 16	23 26	37 56	23 52	36 36	24 18	39 16	24 44	39 56	25 10		2	1	
4	35 13 22	8 35 54	22 35	36 34	32 59	37 14	23 27	37 54	23 53	36 34	24 19	39 14	24 45	39 54	25 11		3	2	
6	35 12 22	8 35 52	22 36	36 32	32 59	37 12	23 28	37 53	23 54	36 33	24 19	39 13	24 45	39 53	25 11		4	3	
8	35 11 22	8 35 51	22 36	36 31	32 59	37 11	23 28	37 51	23 54	36 31	24 20	39 11	24 46	39 51	25 12		5	4	
10	35 9 22	8 35 49	22 37	36 30	32 59	37 10	23 29	37 50	23 55	36 30	24 21	39 10	24 47	39 50	25 13		6	5	
12	35 8 22	8 35 48	22 38	36 28	32 59	37 8	23 30	37 48	23 56	36 28	24 22	39 8	24 48	39 48	25 14		7	6	
14	35 7 22	8 35 47	22 39	36 27	32 59	37 7	23 31	37 47	23 57	36 27	24 23	39 7	24 49	39 47	25 15		8	7	
16	35 5 22	8 35 45	22 40	36 25	32 59	37 5	23 32	37 45	23 57	36 25	24 23	39 5	24 50	39 45	25 16		9	8	
18	35 4 22	8 35 44	22 40	36 24	32 59	37 4	23 32	37 44	23 58	36 24	24 24	39 4	24 51	39 44	25 16		10	9	
20	35 3 22	8 35 43	22 41	36 22	32 59	37 3	23 33	37 42	23 59	36 22	24 25	39 3	24 51	39 42	25 17		11	10	
22	35 1 22	8 35 41	22 42	36 21	32 59	37 1	23 34	37 41	24 0	36 21	24 26	39 2	24 52	39 40	25 18		12	11	
24	35 0 22	8 35 40	22 42	36 20	32 59	37 0	23 34	37 39	24 0	36 19	24 27	38 59	24 53	39 39	25 19		13	12	
26	34 59 22	8 35 39	22 43	36 18	32 59	36 58	23 35	37 38	24 1	36 18	24 27	38 58	24 54	39 37	25 20		14	13	
28	34 57 22	8 35 37	22 44	36 17	32 59	36 57	23 36	37 36	24 2	36 16	24 28	38 56	24 54	39 36	25 20		15	14	
30	34 56 22	8 35 36	22 44	36 15	32 59	36 55	23 37	37 35	24 3	36 15	24 29	38 55	24 55	39 34	25 21		16	15	
32	34 55 22	8 35 34	22 45	36 14	32 59	36 54	23 37	37 34	24 3	36 13	24 30	38 53	24 56	39 33	25 22		17	16	
34	34 53 22	8 35 33	22 46	36 13	32 59	36 52	23 38	37 32	24 4	36 12	24 30	38 52	24 57	39 31	25 23		18	17	
36	34 52 22	8 35 32	22 46	36 11	32 59	36 51	23 39	37 31	24 5	36 10	24 31	38 50	24 57	39 30	25 24		19	18	
38	34 51 22	8 35 30	22 47	36 10	32 59	36 50	23 40	37 29	24 6	36 9	24 32	38 49	24 58	39 28	25 24		20	19	
40	34 49 22	8 35 29	22 48	36 8	32 59	36 48	23 40	37 28	24 6	36 7	24 33	38 47	24 59	39 27	25 25		21	20	
42	34 48 22	8 35 27	22 49	36 7	32 59	36 47	23 41	37 26	24 7	36 6	24 33	38 46	25 0	39 25	25 26		22	21	
44	34 46 22	8 35 26	22 49	36 6	32 59	36 45	23 42	37 25	24 8	36 4	24 34	38 44	25 0	39 23	25 27		23	22	
46	34 45 22	8 35 25	22 50	36 4	32 59	36 43	23 43	37 23	24 9	36 3	24 35	38 43	25 1	39 21	25 27		24	23	
48	34 44 22	8 35 23	22 51	36 3	32 59	36 42	23 43	37 22	24 10	36 2	24 36	38 41	25 1	39 20	25 28		25	24	
50	34 42 22	8 35 22	22 51	36 1	32 59	36 41	23 44	37 21	24 10	36 0	24 37	38 40	25 2	39 19	25 29		26	25	
52	34 41 22	8 35 21	22 52	36 0	32 59	36 40	23 45	37 19	24 11	37 59	24 37	38 38	25 3	39 17	25 30		27	26	
54	34 40 22	8 35 19	22 53	35 59	32 59	36 38	23 46	37 18	24 12	37 57	24 38	38 37	25 4	39 16	25 31		28	27	
56	34 38 22	8 35 18	22 54	35 57	32 59	36 37	23 46	37 16	24 13	37 56	24 39	38 35	25 5	39 14	25 31		29	28	
58	34 37 22	8 35 16	22 55	35 56	32 59	36 35	23 47	37 15	24 13	37 54	24 40	38 34	25 6	39 13	25 32		30	29	
49°	54'	55'	56'	57'	58'	59'	60'	61'	54'	55'	56'	57'	58'	59'	60'	61'			
0	34 36 22	8 35 15	22 55	35 54	32 59	36 34	23 48	37 13	24 14	37 53	24 40	38 32	25 7	39 11	25 33		31	30	
2	34 34 22	8 35 14	22 56	35 53	32 59	36 32	23 49	37 12	24 15	37 51	24 41	38 31	25 8	39 10	25 34		32	31	
4	34 33 22	8 35 12	22 57	35 52	32 59	36 31	23 49	37 10	24 16	37 50	24 42	38 29	25 9	39 8	25 35		33	32	
6	34 32 22	8 35 11	22 57	35 50	32 59	36 30	23 50	37 9	24 16	37 48	24 43	38 27	25 9	39 7	25 35		34	33	
8	34 31 22	8 35 9	22 58	35 49	32 59	36 28	23 51	37 7	24 17	37 47	24 43	38 26	25 10	39 5	25 36		35	34	
10	34 29 22	8 35 8	22 59	35 47	32 59	36 27	23 51	37 6	24 18	37 45	24 44	38 24	25 11	39 4	25 37		36	35	
12	34 27 22	8 35 6	22 59	35 46	32 59	36 25	23 52	37 4	24 19	37 44	24 45	38 23	25 11	39 2	25 38		37	36	
14	34 26 22	8 35 5	22 59	35 44	32 59	36 24	23 53	37 3	24 19	37 42	24 46	38 21	25 12	39 0	25 39		38	37	
16	34 25 22	8 35 4	22 59	35 43	32 59	36 22	23 54	37 1	24 20	37 41	24 46	38 20	25 13	38 59	25 39		39	38	
18	34 23 22	8 35 3	22 59	35 42	32 59	36 21	23 54	37 0	24 21	37 39	24 47	38 18	25 14	38 57	25 40		40	39	
20	34 22 22	8 35 1	22 59	35 40	32 59	36 19	23 55	36 58	24 22	37 37	24 48	38 17	25 15	38 56	25 41		41	40	
22	34 21 22	8 35 0	22 59	35 39	32 59	36 18	23 56	36 57	24 22	37 36	24 49	38 15	25 16	38 54	25 42		42	41	
24	34 19 22	8 34 59	22 59	35 37	32 59	36 16	23 57	36 55	24 23	37 34	24 50	38 14	25 17	38 53	25 42		43	42	
26	34 18 22	8 34 57	22 59	35 36	32 59	36 15	23 57	36 54	24 24	37 33	24 50	38 12	25 18	38 51	25 43		44	43	
28	34 16 22	8 34 56	22 59	35 34	32 59	36 13	23 58	36 52	24 25	37 31	24 51	38 10	25 19	38 50	25 44		45	44	
30	34 15 22	8 34 54	22 59	35 33	32 59	36 12	23 59	36 51	24 25	37 30	24 52	38 8	25 20	38 48	25 45		46	45	
32	34 14 22	8 34 53	22 59	35 32	32 59	36 11	24 0	36 49	24 26	37 28	24 53	38 7	25 21	38 46	25 46		47	46	
34	34 12 22	8 34 51	22 59	35 30	32 59	36 9	24 0	36 48	24 27	37 27	24 53	38 6	25 22	38 45	25 46		48	47	
36	34 11 22	8 34 50	22 59	35 29	32 59	36 8	24 1	36 46	24 28	37 26	24 54	38 4	25 23	38 43	25 47		49	48	
38	34 9 22	8 34 48	22 59	35 27	32 59	36 6	24 1	36 45	24 28	37 24	24 55	38 3	25 24	38 42	25 48		50	49	
40	34 8 22	8 34 47	22 59	35 26	32 59	36 4	24 1	36 43	24 29	37 22	24 56	38 1	25 25	38 40	25 49		51	50	
42	34 7 22	8 34 46	22 59	35 24	32 59	36 3	24 1	36 42	24 30	37 21	24 56	38 0	25 26	38 39	25 50		52	51	
44	34 5 22	8 34 44	22 59	35 23	32 59	36 2	24 1	36 41	24 31	37 19	24 57	37 58	25 27	38 37	25 50		53	52	
46	34 4 22	8 34 43	22 59	35 22	32 59	36 0	24 1	36 39	24 31	37 18	24 58	37 57	25 28	38 35	25 51		54	53	
48	34 3 22	8 34 41	22 59	35 20	32 59	35 59	24 1	36 38	24 32	37 16	24 59	37 55	25 29	38 34	25 52		55	54	
50	34 1 22	8 34 40	22 59	35 19	32 59	35 57	24 1	36 36	24 33	37 15	24 59	37 54	25 30	38 32	25 53		56	55	
52	34 0 22	8 34 39	22 59	35 17	32 59	35 56	24 1	36 35	24 34	37 13	25 0	37 52	25 31	38 31	25 53		57	56	
54	33 59 22	8 34 37	22 59	35 16	32 59	35 55	24 1	36 33	24 34	37 12	25 0	37 50	25 32	38 29	25 54		58	57	
56	33 57 22	8 34 36	22 59	35 14	32 59	35 53	24 1	36 32	24 35	37 10	25 0	37 49	25 33	38 28	25 55		59	58	
58	33 56 22	8 34 34	22 59	35 13	32 59	35 52	24 1	36 30	24 36	37 9	25 0	37 47	25 34	38 26	25 56		60	59	

(50° and 51°) The Correction of the Moon's Altitude, and the Aux. Angle A. (w)																			
App. Alt.	Minutes of Moon's Hor. Parallax.																Seconds of H. P.		
	54'	55'	56'	57'	58'	59'	60'	61'	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.
50	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.
0	33 54	22 50	34 33	23 16	35 12	23 43	35 50	24 10	36 29	24 36	37 7	25 3	37 46	25 30	38 24	26 57	1	1	0
2	33 53	22 50	34 32	23 17	35 10	23 44	35 49	24 11	36 27	24 37	37 6	25 4	37 44	25 31	38 23	26 57	2	2	1
4	33 52	22 51	34 30	23 18	35 9	23 45	35 47	24 11	36 26	24 38	37 4	25 5	37 43	25 31	38 21	26 58	3	3	2
6	33 50	22 52	34 29	23 19	35 7	23 45	35 46	24 12	36 24	24 39	37 3	25 6	37 41	25 32	38 20	26 59	4	4	3
8	33 49	22 53	34 27	23 19	35 6	23 46	35 44	24 13	36 23	24 39	37 1	25 7	37 40	25 33	38 18	26 60	5	5	4
10	33 47	22 53	34 26	23 20	35 4	23 47	35 43	24 13	36 21	24 40	37 0	25 8	37 39	25 34	38 17	26 60	6	6	5
12	33 46	22 54	34 24	23 21	35 3	23 47	35 41	24 14	36 20	24 41	36 58	25 9	37 38	25 34	38 15	26 61	7	7	6
14	33 45	22 55	34 23	23 21	35 1	23 48	35 40	24 15	36 18	24 42	36 57	25 10	37 37	25 35	38 13	26 62	8	8	7
16	33 43	22 56	34 22	23 22	35 0	23 49	35 38	24 16	36 17	24 42	36 55	25 11	37 36	25 36	38 12	26 63	9	9	8
18	33 42	22 56	34 20	23 23	34 58	23 49	35 37	24 16	36 15	24 43	36 53	25 12	37 35	25 37	38 10	26 64	10	10	9
20	33 40	22 57	34 19	23 23	34 57	23 50	35 35	24 17	36 14	24 44	36 52	25 13	37 34	25 38	38 9	26 65	11	11	10
22	33 39	22 57	34 17	23 24	34 56	23 51	35 34	24 18	36 12	24 45	36 50	25 14	37 33	25 38	38 7	26 66	12	12	11
24	33 38	22 58	34 16	23 25	34 54	23 52	35 32	24 18	36 11	24 45	36 49	25 15	37 32	25 39	38 5	26 67	13	13	12
26	33 36	22 59	34 14	23 26	34 53	23 52	35 31	24 19	36 9	24 46	36 47	25 16	37 31	25 40	38 4	26 68	14	14	13
28	33 35	22 59	34 13	23 26	34 51	23 53	35 29	24 20	36 8	24 47	36 46	25 17	37 30	25 40	38 2	26 69	15	15	14
30	33 33	23 0	34 12	23 27	34 50	23 54	35 28	24 21	36 6	24 47	36 44	25 18	37 29	25 41	38 1	26 70	16	16	15
32	33 32	23 0	34 11	23 28	34 48	23 54	35 26	24 21	36 5	24 48	36 43	25 19	37 28	25 42	37 59	26 71	17	17	16
34	33 31	23 0	34 10	23 28	34 47	23 55	35 25	24 22	36 3	24 49	36 41	25 20	37 27	25 43	37 58	26 72	18	18	17
36	33 29	23 0	34 9	23 29	34 45	23 56	35 24	24 23	36 2	24 50	36 40	25 21	37 26	25 43	37 56	26 73	19	19	18
38	33 28	23 0	34 8	23 30	34 44	23 57	35 22	24 23	36 0	24 50	36 38	25 22	37 25	25 44	37 54	26 74	20	20	19
40	33 26	23 0	34 7	23 30	34 43	23 57	35 21	24 24	35 59	24 51	36 37	25 23	37 24	25 45	37 53	26 75	21	21	20
42	33 25	23 0	34 6	23 31	34 41	23 58	35 19	24 25	35 57	24 52	36 35	25 24	37 23	25 46	37 51	26 76	22	22	21
44	33 24	23 0	34 5	23 32	34 40	23 59	35 18	24 26	35 56	24 53	36 34	25 25	37 22	25 46	37 50	26 77	23	23	22
46	33 22	23 0	34 4	23 32	34 38	23 59	35 16	24 26	35 54	24 53	36 32	25 26	37 21	25 47	37 48	26 78	24	24	23
48	33 21	23 0	34 3	23 33	34 37	24 0	35 15	24 27	35 53	24 54	36 31	25 27	37 20	25 48	37 46	26 79	25	25	24
50	33 19	23 0	34 2	23 34	34 35	24 0	35 13	24 28	35 51	24 55	36 29	25 28	37 19	25 49	37 45	26 80	26	26	25
52	33 18	23 0	34 1	23 35	34 34	24 0	35 12	24 29	35 50	24 56	36 28	25 29	37 18	25 50	37 43	26 81	27	27	26
54	33 17	23 0	34 0	23 35	34 32	24 0	35 10	24 29	35 48	24 56	36 26	25 30	37 17	25 50	37 42	26 82	28	28	27
56	33 15	23 0	33 59	23 36	34 31	24 0	35 9	24 30	35 47	24 57	36 24	25 31	37 16	25 51	37 40	26 83	29	29	28
58	33 14	23 0	33 58	23 37	34 29	24 0	35 7	24 31	35 45	24 58	36 23	25 32	37 15	25 52	37 38	26 84	30	30	29
51	54'	55'	56'	57'	58'	59'	60'	61'	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.
0	33 12	23 10	33 50	23 37	34 28	24 0	35 6	24 31	35 44	24 58	36 21	25 25	36 50	25 53	37 37	26 80	31	31	30
2	33 11	23 11	33 49	23 38	34 27	24 0	35 5	24 32	35 42	24 59	36 20	25 26	36 50	25 53	37 35	26 81	32	32	31
4	33 10	23 12	33 47	23 39	34 25	24 0	35 3	24 33	35 41	25 0	36 18	25 27	36 50	25 54	37 34	26 82	33	33	32
6	33 9	23 13	33 46	23 39	34 24	24 0	35 2	24 34	35 39	25 1	36 17	25 28	36 50	25 55	37 32	26 83	34	34	33
8	33 7	23 13	33 44	23 40	34 22	24 0	35 0	24 34	35 37	25 1	36 15	25 28	36 50	25 56	37 30	26 84	35	35	34
10	33 5	23 14	33 43	23 41	34 21	24 0	34 58	24 35	35 36	25 1	36 14	25 29	36 51	25 56	37 29	26 85	36	36	35
12	33 4	23 15	33 42	23 41	34 19	24 0	34 57	24 36	35 34	25 1	36 12	25 30	36 50	25 57	37 27	26 86	37	37	36
14	33 3	23 15	33 40	23 42	34 18	24 0	34 55	24 36	35 33	25 1	36 10	25 31	36 50	25 58	37 26	26 87	38	38	37
16	33 1	23 16	33 39	23 43	34 16	24 0	34 54	24 37	35 31	25 1	36 9	25 31	36 50	25 59	37 24	26 88	39	39	38
18	33 0	23 16	33 37	23 44	34 15	24 0	34 52	24 38	35 30	25 1	36 7	25 32	36 50	25 59	37 22	26 89	40	40	39
20	32 58	23 17	33 36	23 44	34 13	24 0	34 51	24 39	35 28	25 1	36 6	25 33	36 50	25 59	37 21	26 90	41	41	40
22	32 57	23 18	33 34	23 45	34 12	24 0	34 49	24 39	35 27	25 1	36 4	25 34	36 50	25 59	37 19	26 91	42	42	41
24	32 55	23 18	33 33	23 46	34 10	24 0	34 48	24 40	35 25	25 1	36 3	25 34	36 50	25 59	37 18	26 92	43	43	42
26	32 54	23 19	33 31	23 46	34 9	24 0	34 46	24 41	35 24	25 1	36 2	25 35	36 50	25 59	37 16	26 93	44	44	43
28	32 53	23 20	33 30	23 47	34 7	24 0	34 44	24 41	35 22	25 1	36 0	25 36	36 50	25 59	37 14	26 94	45	45	44
30	32 51	23 20	33 29	23 48	34 6	24 0	34 43	24 42	35 21	25 1	35 58	25 36	36 50	25 59	37 13	26 95	46	46	45
32	32 50	23 21	33 27	23 48	34 4	24 0	34 42	24 43	35 19	25 1	35 56	25 37	36 50	25 59	37 11	26 96	47	47	46
34	32 48	23 22	33 26	23 49	34 3	24 0	34 40	24 43	35 18	25 1	35 55	25 38	36 50	25 59	37 10	26 97	48	48	47
36	32 47	23 22	33 24	23 50	34 2	24 0	34 39	24 44	35 16	25 1	35 53	25 39	36 50	25 59	37 8	26 98	49	49	48
38	32 46	23 23	33 23	23 50	34 1	24 0	34 37	24 45	35 15	25 1	35 52	25 39	36 50	25 59	37 7	26 99	50	50	49
40	32 44	23 24	33 21	23 51	33 59	24 0	34 36	24 45	35 13	25 1	35 50	25 40	36 50	25 59	37 5	27 00	51	51	50
42	32 43	23 24	33 20	23 52	33 57	24 0	34 34	24 46	35 11	25 1	35 49	25 41	36 50	25 59	37 3	27 01	52	52	51
44	32 41	23 25	33 18	23 52	33 56	24 0	34 33	24 47	35 10	25 1	35 47	25 42	36 50	25 59	37 2	27 02	53	53	52
46	32 40	23 26	33 17	23 53	33 54	24 0	34 31	24 48	35 8	25 1	35 46	25 42	36 50	25 59	37 0	27 03	54	54	53
48	32 38	23 26	33 16	23 54	33 53	24 0	34 30	24 48	35 7	25 1	35 44	25 43	36 50	25 59	36 58	27 04	55	55	54
50	32 37	23 27	33 14	23 54	33 51	24 0	34 28	24 49	35 5	25 1	35 42	25 44	36 50	25 59	36 56	27 05	56	56	55
52	32 36	23 28	33 13	23 55	33 50	24 0	34 27	24 50	35 4	25 1	35 41	25 44	36 50	25 59	36 55	27 06	57	57	56
54	32 34	23 29	33 11	23 56	33 48	24 0	34 25	24 50	35 3	25 1	35 39	25 45	36 50	25 59	36 53	27 07	58	58	57
56	32 33	23 29	33 10	23 56	33 47	24 0	34 24	24 51	35 2	25 1	35 38	25 46	36 50	25 59	36 52	27 08	59	59	58
58	32 31	23 30	33 8	23 57	33 46	24 0	34 22	24 52	35 1	25 1	35 36	25 47	36 50	25 59	36 50	27 09	60	60	59

(54° and 55°) The Correction of the Moon's Altitude, and the Aux. Angle A.															(w.)				
App. Alt.	Minutes of Moon's Hor. Parallax.														Seconds of H. P.				
	54'		55'		56'		57'		58'		59'		60'		61'		"	"	
54°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	"	"	
0'	31	24	9	31	38	24	37	32	13	25	6	32	49	25	33	33	24	1	0
2	31	1	24	10	31	37	24	38	32	12	25	6	32	47	25	34	33	2	1
4	31	0	34	10	31	35	24	38	32	10	25	7	32	45	25	35	33	4	2
6	30	58	24	11	31	34	24	39	32	9	25	7	32	44	25	35	33	6	3
8	30	57	24	12	31	32	24	40	32	7	25	8	32	42	25	36	33	8	4
10	30	55	24	12	31	30	24	40	32	6	25	8	32	41	25	37	33	10	5
12	30	54	24	13	31	29	24	41	32	4	25	9	32	39	25	37	33	12	6
14	30	52	24	13	31	27	24	42	32	3	25	10	32	38	25	38	33	14	7
16	30	51	24	14	31	26	24	42	32	1	25	10	32	36	25	39	33	16	8
18	30	49	24	15	31	24	24	43	31	58	25	11	32	34	25	39	33	18	9
20	30	48	24	15	31	23	24	43	31	56	25	12	32	33	25	40	33	20	10
22	30	46	24	16	31	21	24	44	31	55	25	12	32	31	25	41	33	22	11
24	30	45	24	17	31	20	24	45	31	53	25	13	32	30	25	41	33	24	12
26	30	43	24	17	31	18	24	45	31	51	25	14	32	28	25	42	33	26	13
28	30	42	24	18	31	17	24	46	31	50	25	14	32	27	25	42	33	28	14
30	30	40	24	18	31	15	24	47	31	50	25	15	32	25	25	43	33	30	15
32	30	39	24	19	31	14	24	47	31	49	25	16	32	23	25	44	33	32	16
34	30	37	24	20	31	12	24	48	31	47	25	16	32	22	25	44	33	34	17
36	30	36	24	20	31	11	24	48	31	45	25	17	32	20	25	45	33	36	18
38	30	34	24	21	31	9	24	49	31	44	25	17	32	19	25	46	33	38	19
40	30	33	24	21	31	8	24	50	31	42	25	18	32	17	25	46	33	40	20
42	30	32	24	22	31	6	24	50	31	41	25	19	32	16	25	47	33	42	21
44	30	30	24	23	31	5	24	51	31	39	25	19	32	14	25	48	33	44	22
46	30	29	24	23	31	3	24	52	31	38	25	20	32	12	25	48	33	46	23
48	30	27	24	24	31	2	24	52	31	36	25	21	32	11	25	49	33	48	24
50	30	26	24	24	31	0	24	53	31	35	25	21	32	9	25	50	33	50	25
52	30	24	24	25	30	59	24	54	31	33	25	22	32	8	25	50	33	52	26
54	30	23	24	26	30	57	24	54	31	32	25	23	32	6	25	51	33	54	27
56	30	21	24	26	30	56	24	55	31	30	25	23	32	5	25	52	33	56	28
58	30	20	24	27	30	54	24	55	31	29	25	24	32	3	25	52	33	58	29
55°	54'	55'	56'	57'	58'	59'	60'	61'	A		A		A		A		A		
0'	30	18	24	28	30	62	24	56	31	27	25	24	32	1	25	53	32	33	19
2	30	17	24	28	30	51	24	57	31	25	25	25	32	0	25	54	32	34	20
4	30	15	24	29	30	49	24	57	31	24	25	26	31	58	25	54	32	35	21
6	30	14	24	29	30	48	24	58	31	22	25	26	31	57	25	55	32	36	22
8	30	12	24	30	30	46	24	58	31	21	25	27	31	55	25	56	32	37	23
10	30	11	24	31	30	45	24	59	31	19	25	28	31	53	25	56	32	38	24
12	30	9	24	31	30	43	25	0	31	18	25	28	31	52	25	57	32	39	25
14	30	8	24	32	30	42	25	0	31	16	25	29	31	50	25	57	32	40	26
16	30	6	24	32	30	40	25	1	31	15	25	30	31	49	25	58	32	41	27
18	30	5	24	33	30	39	25	2	31	13	25	30	31	47	25	59	32	42	28
20	30	3	24	34	30	37	25	3	31	11	25	31	31	45	25	59	32	43	29
22	30	2	24	34	30	36	25	3	31	10	25	31	31	44	25	60	32	44	30
24	30	0	24	35	30	34	25	4	31	8	25	32	31	42	25	60	32	45	31
26	29	59	24	35	30	33	25	4	31	7	25	33	31	41	25	61	32	46	32
28	29	57	24	36	30	31	25	5	31	5	25	33	31	39	25	61	32	47	33
30	29	56	24	37	30	30	25	5	31	4	25	34	31	38	25	62	32	48	34
32	29	54	24	37	30	28	25	6	31	2	25	35	31	36	25	62	32	49	35
34	29	53	24	38	30	26	25	7	31	0	25	35	31	34	25	63	32	50	36
36	29	51	24	38	30	25	25	7	30	59	25	36	31	33	25	63	32	51	37
38	29	50	24	39	30	23	25	8	30	57	25	36	31	31	25	63	32	52	38
40	29	48	24	40	30	22	25	8	30	56	25	37	31	30	25	63	32	53	39
42	29	46	24	40	30	20	25	9	30	54	25	38	31	28	25	63	32	54	40
44	29	45	24	41	30	19	25	10	30	53	25	38	31	26	25	63	32	55	41
46	29	43	24	42	30	17	25	10	30	51	25	39	31	25	25	63	32	56	42
48	29	42	24	42	30	16	25	11	30	49	25	40	31	23	25	63	32	57	43
50	29	40	24	43	30	14	25	11	30	48	25	40	31	22	25	63	32	58	44
52	29	39	24	43	30	13	25	12	30	46	25	41	31	20	25	63	32	59	45
54	29	37	24	44	30	11	25	13	30	45	25	42	31	18	25	63	32	60	46
56	29	36	24	45	30	10	25	13	30	43	25	42	31	17	25	63	32	61	47
58	29	34	24	46	30	8	25	14	30	42	25	43	31	15	25	63	32	62	48

(w.) The Correction of the Moon's Altitude, and the Aux. Angle A. (56° and 57°)																	
App Alt.	Minutes of Moon's Hor. Parallax.																Seconds of H. P.
	54'		55'		56'		57'		58'		59'		60'		61'		
56°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	
0'	20 33	24 46 30	7 25	15 30 40	25 43	31 14 26	12 31	47 26 41	32 21	27 10 32	54 27 38	33 28 26	7				
2	20 31	24 46 30	5 25	15 30 39	25 44	31 12 26	13 31	46 26 42	32 19	27 10 32	53 27 39	33 26 28	8				
4	20 30	24 47 30	3 25	16 30 37	25 45	31 10 26	13 31	44 26 42	32 17	27 11 32	51 27 40	33 24 28	9				
6	20 28	24 48 30	1 25	16 30 35	25 45	31 9 26	14 31	42 26 43	32 16	27 12 32	49 27 40	33 23 28	9				
8	20 27	24 48 30	0 25	17 30 34	25 46	31 7 26	15 31	41 26 43	32 14	27 12 32	48 27 41	33 21 28	10				
10	20 26	24 49 30	59	18 30 32	25 46	31 0 26	15 31	39 26 44	32 12	27 13 32	46 27 42	33 19 28	11				
12	20 24	24 49 29	57	18 30 31	25 47	31 4 26	16 31	37 26 45	32 11	27 14 32	44 27 43	33 18 28	11				
14	20 22	24 50 29	56	19 30 29	25 48	31 2 26	17 31	36 26 45	32 9	27 14 32	42 27 43	33 16 28	12				
16	20 21	24 51 29	54	19 30 27	25 48	31 1 26	17 31	34 26 46	32 7	27 15 32	41 27 44	33 14 28	13				
18	20 19	24 51 29	53	20 30 26	25 49	30 59	26 18	33 26 47	32 6	27 16 32	39 27 44	33 12 28	14				
20	20 18	24 52 29	51	21 30 24	25 49	30 58	26 18	31 26 47	32 4	27 16 32	37 27 45	33 11 28	14				
22	20 16	24 52 29	50	22 30 23	25 50	30 56	26 19	31 29 28	48 32	2 37	17 32 36	27 46 33	9 28	15			
24	20 15	24 53 29	48	23 30 21	25 51	30 54	26 20	31 28 26	49 32	0 27	17 32 34	27 46 33	7 28	15			
26	20 13	24 53 29	46	23 30 20	25 51	30 53	26 20	31 26 26	49 31	59	27 18 32	32 27 47	33 6 28	16			
28	20 12	24 54 29	45	23 30 18	25 52	30 51	26 21	31 24 26	50 31	57	27 19 32	31 27 48	33 4 28	17			
30	20 10	24 55 29	43	24 30 16	25 53	30 50	26 22	31 23 26	50 31	56	27 19 32	29 27 48	33 2 28	17			
32	20 9	24 55 29	42	24 30 15	25 53	30 48	26 23	31 21 26	51 31	54	27 20 32	27 27 49	33 0 28	18			
34	20 7	24 56 29	40	25 25 30 13	25 54	30 46	26 23	31 19 26	52 31	52	27 21 32	25 27 50	32 59 28	19			
36	20 6	24 56 29	39	25 25 30 12	25 54	30 45	26 23	31 18 26	52 31	51	27 21 32	24 27 50	32 57 28	19			
38	20 4	24 57 29	37	25 25 30 10	25 55	30 43	26 24	31 16 26	53 31	49	27 22 32	22 27 51	32 55 28	20			
40	20 2	24 58 29	35	25 27 30 8	25 56	30 41	26 25	31 14 26	54 31	47	27 23 32	20 27 52	32 53 28	21			
42	20 1	24 58 29	34	25 27 30 7	25 56	30 40	26 25	31 13 26	54 31	46	27 23 32	19 27 52	32 52 28	21			
44	20 0	24 59 29	32	25 28 30 5	25 57	30 38	26 26	31 11 26	55 31	44	27 24 32	17 27 53	32 50 28	22			
46	20 0	24 59 29	31	25 28 30 4	25 58	30 37	26 27	31 10 26	56 31	42	27 25 32	15 27 54	32 48 28	23			
48	20 0	25 0 29	29	25 29 30 3	25 58	30 35	26 27	31 8 26	56 31	41	27 25 32	14 27 54	32 47 28	23			
50	20 0	25 0 29	28	25 29 30 30	25 59	30 34	26 28	31 6 26	57 31	39	27 26 32	12 27 55	32 45 28	24			
52	20 0	25 0 29	26	25 30 29 59	25 59	30 32	26 28	31 5 26	57 31	37	27 27 32	10 27 56	32 43 28	25			
54	20 0	25 0 29	25	25 31 29 57	26 0	30 30	26 29	31 3 26	58 31	36	27 27 32	9 27 56	32 41 28	25			
56	20 0	25 0 29	23	25 32 29 56	26 0	30 29	26 30	31 1 26	59 31	34	27 28 32	7 27 57	32 40 28	26			
58	20 0	25 0 29	22	25 32 29 54	26 0	30 27	26 30	31 0 26	59 31	32	27 28 32	5 27 58	32 38 28	27			
57°	54'	55'	56'	57'	58'	59'	60'	61'									
0'	20 17	25 42	29 20	25 33	29 53	26 23	30 25	36 31	30 58	27 03	31 27	29 32	3 27	58	32 36	28 27	41
2	20 16	25 42	29 18	25 33	29 51	25 23	30 24	36 32	30 56	27 13	31 29	27 30	32 2 27	59	32 34	28 28	42
4	20 14	25 42	29 17	25 34	29 49	25 23	30 22	36 32	30 56	27 13	31 27	27 30	32 0 17	59	32 33	28 29	43
6	20 13	25 43	29 15	25 34	29 48	25 23	30 21	36 33	30 55	27 23	31 26	27 31	31 58	28 0 32	31 28	29 45	44
8	20 11	25 43	29 14	25 35	29 46	25 23	30 19	36 33	30 51	27 23	31 24	27 32	31 57	28 1 32	29 30	46	45
10	20 10	25 40	29 12	25 36	29 45	25 23	30 17	36 34	30 50	27 33	31 22	27 32	31 55	28 1 32	27 28	47	46
12	20 08	25 38	29 11	25 36	29 43	25 23	30 16	36 35	30 48	27 43	31 21	27 33	31 53	28 2 32	26 31	48	47
14	20 07	25 37	29 9	25 37	29 41	25 23	30 14	36 35	30 46	27 43	31 19	27 34	31 51	28 3 32	24 32	49	48
16	20 06	25 35	29 7	25 37	29 40	25 23	30 12	36 36	30 45	27 53	31 17	27 34	31 50	28 3 32	22 33	50	49
18	20 04	25 33	29 5	25 38	29 38	25 23	30 11	36 36	30 43	27 63	31 16	27 35	31 48	28 4 32	20 33	51	50
20	20 03	25 32	29 3	25 38	29 37	25 23	30 9	36 37	30 41	27 63	31 14	27 35	31 46	28 5 32	18 34	52	51
22	20 02	25 30	29 1	25 39	29 35	25 23	30 8	36 38	30 40	27 73	31 12	27 36	31 45	28 6 32	17 35	53	52
24	20 01	25 29	29 0	25 40	29 33	25 23	30 6	36 38	30 38	27 73	31 10	27 37	31 43	28 7 32	15 36	54	53
26	20 00	25 27	28 59	25 40	29 32	25 23	30 4	36 39	30 37	27 83	31 9	27 37	31 41	28 8 32	13 37	55	54
28	20 00	25 25	28 57	25 41	29 30	25 23	30 3	36 39	30 35	27 93	31 7	27 38	31 39	28 9 32	12 38	56	55
30	20 00	25 24	28 56	25 41	29 29	25 23	30 1	36 40	30 33	27 93	31 5	27 38	31 38	28 10 32	10 39	57	56
32	20 00	25 23	28 55	25 42	29 27	25 23	29 59	36 41	30 31	27 103	31 4	27 39	31 36	28 11 32	8 40	58	57
34	20 01	25 23	28 53	25 43	29 25	25 23	29 58	36 41	30 30	27 103	31 2	27 40	31 34	28 12 32	6 41	59	58
36	20 19	25 14	28 52	25 43	29 24	25 23	29 56	36 42	30 28	27 113	31 0	27 40	31 32	28 13 32	4 42	60	59
38	20 18	25 16	28 50	25 44	29 22	25 23	29 54	36 42	30 26	27 123	30 59	27 41	31 31	28 14 32	2 43	61	60
40	20 16	25 16	28 48	25 44	29 21	25 23	29 53	36 43	30 25	27 133	30 57	27 42	31 29	28 15 32	0 44	62	61
42	20 15	25 16	28 47	25 45	29 19	25 23	29 51	36 44	30 23	27 143	30 55	27 42	31 27	28 16 32	0 45	63	62
44	20 13	25 16	28 45	25 46	29 17	25 23	29 49	36 44	30 21	27 153	30 54	27 43	31 26	28 17 32	0 46	64	63
46	20 12	25 17	28 44	25 46	29 16	25 23	29 48	36 45	30 20	27 163	30 52	27 43	31 24	28 18 32	0 47	65	64
48	20 10	25 17	28 42	25 47	29 14	25 23	29 46	36 45	30 18	27 173	30 50	27 44	31 22	28 19 32	0 48	66	65
50	20 9	25 18	28 41	25 47	29 13	25 23	29 45	36 46	30 16	27 183	30 48	27 45	31 20	28 20 32	0 49	67	66
52	20 7	25 19	28 39	25 48	29 11	25 23	29 43	36 47	30 15	27 193	30 47	27 45	31 19	28 21 32	0 50	68	67
54	20 6	25 19	28 38	25 48	29 10	25 23	29 42	36 47	30 13	27 203	30 45	27 46	31 17	28 22 32	0 51	69	68
56	20 4	25 20	28 36	25 49	29 8	25 23	29 40	36 48	30 12	27 213	30 43	27 47	31 15	28 23 32	0 52	70	69
58	20 3	25 20	28 34	25 50	29 6	25 23	29 38	36 48	30 10	27 223	30 42	27 47	31 14	28 24 32	0 53	71	70

(55° and 59°)		The Correction of the Moon's Altitude, and the Aux. Angle A.																(w.)	
App Alt.	Minutes of Moon's Hor. Parallax.																Seconds of R P		
	54'		55'		56'		57'		58'		59'		60'		61'		"	"	
55°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	"	"	
0'	28 1	25 21	28 33	25 50	29 5	26 20	29 36	26 49	30 8	27 18	30 40	27 48	31 12	28 17	31 44	28 47	1	1	
2	27 59	25 21	28 31	25 51	29 3	26 20	29 35	26 50	30 7	27 19	30 38	27 49	31 10	28 18	31 42	28 47	2	1	
4	27 58	25 22	28 30	25 51	29 1	26 21	29 33	26 50	30 5	27 20	30 37	27 49	31 8	28 19	31 40	28 48	4	2	
6	27 56	25 22	28 28	25 52	29 0	26 21	29 31	26 51	30 3	27 20	30 35	27 50	31 7	28 19	31 38	28 49	6	3	
8	27 55	25 23	28 26	25 52	28 58	26 22	29 30	26 51	30 1	27 21	30 33	27 50	31 5	28 20	31 37	28 49	8	4	
10	27 53	25 24	28 25	25 53	28 56	26 23	29 28	26 52	30 0	27 21	30 31	27 51	31 3	28 20	31 35	28 50	10	5	
12	27 52	25 24	28 23	25 54	28 55	26 23	29 26	26 53	29 58	27 22	30 30	27 52	31 1	28 21	31 33	28 51	12	6	
14	27 50	25 25	28 22	25 54	28 53	26 24	29 25	26 53	29 56	27 23	30 28	27 52	31 0	28 22	31 31	28 51	14	7	
16	27 49	25 25	28 20	25 55	28 52	26 24	29 23	26 54	29 55	27 23	30 26	27 53	30 58	28 22	31 30	28 52	16	8	
18	27 47	25 26	28 18	25 55	28 50	26 25	29 22	26 54	29 53	27 24	30 25	27 53	30 56	28 23	31 28	28 52	18	9	
20	27 45	25 26	28 17	25 56	28 48	26 25	29 20	26 55	29 51	27 24	30 23	27 54	30 54	28 24	31 26	28 53	20	10	
22	27 44	25 27	28 15	25 56	28 47	26 26	29 18	26 56	29 50	27 25	30 21	27 55	30 53	28 24	31 24	28 54	22	11	
24	27 42	25 28	28 14	25 57	28 45	26 27	29 17	26 56	29 48	27 26	30 19	27 55	30 51	28 25	31 22	28 54	24	12	
26	27 41	25 28	28 12	25 58	28 44	26 27	29 15	26 57	29 46	27 26	30 18	27 56	30 49	28 25	31 21	28 55	26	13	
28	27 39	25 29	28 11	25 58	28 42	26 28	29 13	26 57	29 45	27 27	30 16	27 56	30 47	28 26	31 19	28 56	28	14	
30	27 38	25 29	28 9	25 59	28 40	26 28	29 12	26 58	29 43	27 27	30 14	27 57	30 46	28 27	31 17	28 56	30	15	
32	27 36	25 30	28 7	25 59	28 39	26 29	29 10	26 59	29 41	27 28	30 13	27 58	30 44	28 27	31 15	28 57	32	16	
34	27 34	25 30	28 6	25 59	28 37	26 30	29 8	26 59	29 40	27 29	30 11	27 58	30 42	28 28	31 14	28 57	34	17	
36	27 33	25 31	28 4	25 59	28 35	26 30	29 7	26 59	29 38	27 29	30 9	27 59	30 40	28 29	31 12	28 58	36	18	
38	27 31	25 31	28 3	25 59	28 34	26 31	29 5	26 59	29 36	27 30	30 8	27 59	30 39	28 29	31 10	28 59	38	19	
40	27 30	25 32	28 1	25 59	28 32	26 31	29 3	26 59	29 34	27 30	30 6	27 59	30 37	28 30	31 8	28 59	40	20	
42	27 28	25 33	27 59	25 59	28 30	26 32	29 2	26 59	29 32	27 31	30 4	27 59	30 35	28 31	31 6	28 59	42	21	
44	27 27	25 33	27 58	25 59	28 28	26 32	29 0	26 59	29 30	27 31	30 2	27 59	30 33	28 31	31 4	28 59	44	22	
46	27 25	25 34	27 56	25 59	28 27	26 33	28 58	26 59	29 28	27 32	30 0	27 59	30 31	28 32	31 2	28 59	46	23	
48	27 24	25 34	27 55	25 59	28 26	26 34	28 57	26 59	29 27	27 32	29 58	27 59	30 29	28 32	31 0	28 59	48	24	
50	27 22	25 35	27 53	25 59	28 24	26 34	28 55	26 59	29 25	27 33	29 56	27 59	30 27	28 33	30 58	28 59	50	25	
52	27 20	25 35	27 51	25 59	28 22	26 35	28 53	26 59	29 23	27 34	29 56	27 59	30 25	28 34	30 56	28 59	52	26	
54	27 18	25 36	27 50	25 59	28 21	26 35	28 52	26 59	29 22	27 35	29 54	27 59	30 24	28 34	30 55	28 59	54	27	
56	27 17	25 36	27 48	25 59	28 20	26 36	28 50	26 59	29 21	27 35	29 52	27 59	30 23	28 35	30 54	28 59	56	28	
58	27 16	25 37	27 47	25 59	28 18	26 37	28 48	26 59	29 19	27 36	29 50	27 59	30 22	28 35	30 52	28 59	58	29	
59°	27 14	25 38	27 45	25 59	28 17	26 37	28 47	26 59	29 18	27 36	29 48	27 59	30 20	28 36	30 51	28 59	59	30	
0	27 13	25 38	27 43	25 59	28 16	26 38	28 45	26 59	29 17	27 37	29 47	27 59	30 18	28 37	30 49	28 59	0	1	
2	27 11	25 39	27 42	25 59	28 15	26 38	28 44	26 59	29 16	27 38	29 45	27 59	30 16	28 38	30 47	28 59	2	2	
4	27 9	25 39	27 40	25 59	28 14	26 39	28 42	26 59	29 15	27 39	29 44	27 59	30 14	28 39	30 45	28 59	4	3	
6	27 7	25 40	27 39	25 59	28 13	26 39	28 40	26 59	29 14	27 40	29 42	27 59	30 13	28 40	30 43	28 59	6	4	
8	27 5	25 40	27 37	25 59	28 12	26 40	28 39	26 59	29 13	27 41	29 40	27 59	30 11	28 41	30 42	28 59	8	5	
10	27 3	25 41	27 35	25 59	28 11	26 40	28 37	26 59	29 12	27 42	29 38	27 59	30 10	28 42	30 40	28 59	10	6	
12	27 1	25 41	27 33	25 59	28 10	26 41	28 35	26 59	29 11	27 43	29 36	27 59	30 8	28 43	30 38	28 59	12	7	
14	26 59	25 42	27 31	25 59	28 9	26 41	28 34	26 59	29 10	27 44	29 34	27 59	30 7	28 44	30 36	28 59	14	8	
16	26 57	25 42	27 29	25 59	28 8	26 42	28 32	26 59	29 9	27 45	29 32	27 59	30 6	28 45	30 34	28 59	16	9	
18	26 55	25 43	27 27	25 59	28 7	26 42	28 30	26 59	29 8	27 46	29 30	27 59	30 5	28 46	30 32	28 59	18	10	
20	26 53	25 43	27 25	25 59	28 6	26 43	28 28	26 59	29 7	27 47	29 28	27 59	30 4	28 47	30 30	28 59	20	11	
22	26 51	25 44	27 23	25 59	28 5	26 43	28 26	26 59	29 6	27 48	29 26	27 59	30 3	28 48	30 28	28 59	22	12	
24	26 49	25 44	27 21	25 59	28 4	26 44	28 24	26 59	29 5	27 49	29 24	27 59	30 2	28 49	30 26	28 59	24	13	
26	26 47	25 45	27 19	25 59	28 3	26 44	28 22	26 59	29 4	27 50	29 22	27 59	30 1	28 50	30 24	28 59	26	14	
28	26 45	25 45	27 17	25 59	28 2	26 45	28 20	26 59	29 3	27 51	29 20	27 59	29 59	28 51	30 22	28 59	28	15	
30	26 43	25 46	27 15	25 59	28 1	26 45	28 18	26 59	29 2	27 52	29 18	27 59	29 58	28 52	30 20	28 59	30	16	
32	26 41	25 46	27 13	25 59	28 0	26 46	28 16	26 59	29 1	27 53	29 16	27 59	29 56	28 53	30 18	28 59	32	17	
34	26 39	25 47	27 11	25 59	27 59	26 46	28 14	26 59	29 0	27 54	29 14	27 59	29 55	28 54	30 16	28 59	34	18	
36	26 37	25 47	27 09	25 59	27 58	26 47	28 12	26 59	28 59	27 55	29 12	27 59	29 53	28 55	30 14	28 59	36	19	
38	26 35	25 48	27 07	25 59	27 57	26 47	28 10	26 59	28 58	27 56	29 10	27 59	29 52	28 56	30 12	28 59	38	20	
40	26 33	25 48	27 05	25 59	27 56	26 48	28 08	26 59	28 57	27 57	29 08	27 59	29 50	28 57	30 10	28 59	40	21	
42	26 31	25 49	27 03	25 59	27 55	26 48	28 06	26 59	28 56	27 58	29 06	27 59	29 48	28 58	30 08	28 59	42	22	
44	26 29	25 50	27 01	25 59	27 54	26 49	28 04	26 59	28 55	27 59	29 04	27 59	29 46	28 59	30 06	28 59	44	23	
46	26 27	25 50	26 59	25 59	27 53	26 50	28 02	26 59	28 54	27 59	29 02	27 59	29 44	28 59	30 04	28 59	46	24	
48	26 25	25 51	26 57	25 59	27 52	26 50	27 59	26 59	28 53	27 59	28 59	27 59	29 40	28 59	29 58	28 59	48	25	
50	26 23	25 51	26 55	25 59	27 51	26 51	27 57	26 59	28 52	27 59	28 58	27 59	29 38	28 59	29 56	28 59	50	26	
52	26 21	25 52	26 53	25 59	27 50	26 51	27 55	26 59	28 51	27 59	28 57	27 59	29 36	28 59	29 54	28 59	52	27	
54	26 19	25 52	26 51	25 59	27 49	26 52	27 53	26 59	28 50	27 59	28 56	27 59	29 34	28 59	29 52	28 59	54	28	
56	26 17	25 53	26 49	25 59	27 48	26 53	27 51	26 59	28 49	27 59	28 55	27 59	29 32	28 59	29 50	28 59	56	29	
58	26 15																		

(w.) The Correction of the Moon's Altitude, and the Aux. Angle A. (60° and 61°)																		
App. Alt.	Minutes of Moon's Hor. Parallax.																Seconds of H. P.	
	54'	55'	56'	57'	58'	59'	60'	61'	54'	55'	56'	57'	58'	59'	60'	61'	Sec.	Cor.
60°	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	60"	
0'	26 27	25 54	26 57	26 24	27 27	26 54	27 57	27 24	28 27	27 54	28 57	28 24	29 27	28 54	29 57	29 24	1	0
2	26 25	25 54	26 56	26 24	27 25	26 54	27 56	27 25	28 25	27 54	28 56	28 25	29 25	28 55	29 55	29 25	2	1
4	26 24	25 55	26 56	26 25	27 24	26 55	27 54	27 25	28 23	27 55	28 53	28 25	29 23	28 55	29 53	29 25	3	2
6	26 22	25 55	26 56	26 25	27 22	26 55	27 52	27 26	28 22	27 56	28 52	28 26	29 22	28 56	29 51	29 26	4	3
8	26 20	25 56	26 56	26 26	27 20	26 56	27 50	27 26	28 20	27 56	28 50	28 26	29 20	28 56	29 50	29 26	5	4
10	26 19	25 57	26 56	26 26	27 19	26 56	27 48	27 27	28 18	27 57	28 48	28 27	29 18	28 57	29 48	29 27	6	5
12	26 17	25 57	26 57	26 27	27 17	26 57	27 47	27 27	28 17	27 57	28 46	28 27	29 16	28 57	29 46	29 28	7	6
14	26 16	25 58	26 57	26 28	27 15	26 57	27 45	27 28	28 15	27 58	28 45	28 28	29 14	28 58	29 44	29 28	8	7
16	26 14	25 58	26 58	26 28	27 14	26 58	27 43	27 28	28 13	27 58	28 43	28 28	29 13	28 58	29 42	29 29	9	8
18	26 12	25 59	26 58	26 29	27 12	26 58	27 42	27 28	28 11	27 59	28 41	28 29	29 11	28 59	29 41	29 29	10	9
20	26 11	25 59	26 58	26 29	27 10	26 59	27 40	27 29	28 10	27 59	28 39	28 29	29 9	28 59	29 39	29 30	11	10
22	26 9	26 0	26 59	26 30	27 9	27 0	27 38	27 30	28 8	28 0	28 38	28 30	29 7	28 59	29 37	29 31	12	11
24	26 8	26 0	26 59	26 30	27 7	27 0	27 37	27 30	28 6	28 1	28 36	28 31	29 6	28 59	29 35	29 31	13	12
26	26 6	26 1	26 59	26 31	27 5	27 1	27 35	27 31	28 5	28 2	28 34	28 31	29 4	28 59	29 34	29 32	14	13
28	26 4	26 1	26 59	26 31	27 4	27 1	27 33	27 32	28 3	28 3	28 32	28 32	29 2	28 59	29 32	29 32	15	14
30	26 3	26 2	26 59	26 32	27 2	27 2	27 32	27 32	28 1	28 4	28 31	28 32	29 0	28 59	29 30	29 33	16	15
32	26 1	26 2	26 59	26 32	27 0	27 3	27 30	27 33	27 59	28 5	28 29	28 33	28 58	29 0	28 59	29 33	17	16
34	26 0	26 3	26 59	26 33	26 59	27 3	27 28	27 33	27 58	28 6	28 27	28 34	28 57	29 0	28 59	29 34	18	17
36	25 58	26 3	26 59	26 33	26 57	27 4	27 26	27 34	27 56	28 7	28 25	28 34	28 56	29 0	28 59	29 35	19	18
38	25 56	26 4	26 59	26 34	26 55	27 4	27 25	27 34	27 54	28 8	28 24	28 35	28 55	29 0	28 59	29 35	20	19
40	25 55	26 4	26 59	26 34	26 54	27 5	27 23	27 35	27 53	28 9	28 22	28 35	28 54	29 0	28 59	29 36	21	20
42	25 53	26 5	26 59	26 35	26 52	27 5	27 21	27 36	27 51	28 10	28 20	28 36	28 53	29 0	28 59	29 36	22	21
44	25 52	26 6	26 59	26 36	26 50	27 6	27 20	27 36	27 49	28 11	28 18	28 37	28 52	29 0	28 59	29 37	23	22
46	25 50	26 6	26 59	26 36	26 49	27 6	27 18	27 37	27 47	28 12	28 17	28 37	28 46	29 0	28 59	29 38	24	23
48	25 48	26 7	26 59	26 37	26 47	27 7	27 16	27 37	27 46	28 13	28 15	28 38	28 44	29 0	28 59	29 38	25	24
50	25 47	26 7	26 59	26 37	26 45	27 8	27 15	27 38	27 44	28 14	28 13	28 38	28 42	29 0	28 59	29 39	26	25
52	25 45	26 8	26 59	26 38	26 44	27 8	27 13	27 38	27 43	28 15	28 11	28 39	28 41	29 0	28 59	29 39	27	26
54	25 44	26 8	26 59	26 38	26 42	27 9	27 11	27 38	27 40	28 16	28 10	28 39	28 39	29 0	28 59	29 40	28	27
56	25 42	26 9	26 59	26 39	26 40	27 9	27 10	27 38	27 39	28 17	28 8	28 40	28 37	29 0	28 59	29 40	29	28
58	25 40	26 9	26 59	26 39	26 39	27 10	27 8	27 40	27 37	28 18	28 6	28 41	28 36	29 0	28 59	29 41	30	29
61°	54'	55'	56'	57'	58'	59'	60'	61'	54'	55'	56'	57'	58'	59'	60'	61'		
0'	25 39	26 10	26 40	26 37	27 10	27 6	27 41	27 36	28 11	28 4	28 41	28 33	29 11	29 3	29 42	41 24	1	0
2	25 37	26 10	26 41	26 35	27 11	27 4	27 41	27 34	28 11	28 3	28 42	28 32	29 12	29 1	29 42	42 25	2	1
4	25 36	26 11	26 41	26 34	27 11	27 3	27 42	27 32	28 12	28 0	28 42	28 30	29 13	28 59	29 43	43 26	3	2
6	25 34	26 11	26 42	26 32	27 12	27 1	27 42	27 30	28 13	27 59	28 43	28 28	29 13	28 57	29 44	44 27	4	3
8	25 32	26 12	26 42	26 30	27 12	26 59	27 43	27 28	28 13	27 57	28 43	28 26	29 14	28 55	29 44	45 28	5	4
10	25 31	26 12	26 43	26 29	27 13	26 58	27 43	27 27	28 14	27 56	28 44	28 24	29 15	28 53	29 45	46 29	6	5
12	25 29	26 13	26 43	26 27	27 13	26 56	27 44	27 25	28 14	27 54	28 44	28 23	29 16	28 52	29 45	47 30	7	6
14	25 28	26 13	26 44	26 25	27 14	26 54	27 44	27 23	28 15	27 52	28 45	28 21	29 17	28 50	29 46	48 31	8	7
16	25 26	26 14	26 44	26 24	27 15	26 53	27 45	27 21	28 15	27 50	28 46	28 19	29 18	28 48	29 46	49 32	9	8
18	25 24	26 15	26 45	26 22	27 15	26 51	27 45	27 20	28 16	27 48	28 46	28 17	29 19	28 46	29 47	50 33	10	9
20	25 23	26 15	26 45	26 20	27 16	26 49	27 46	27 18	28 16	27 47	28 47	28 16	29 20	28 44	29 47	51 34	11	10
22	25 21	26 15	26 46	26 19	27 16	26 47	27 47	27 16	28 17	27 45	28 47	28 14	29 21	28 42	29 48	52 35	12	11
24	25 19	26 16	26 46	26 17	27 17	26 46	27 47	27 14	28 17	27 43	28 48	28 12	29 22	28 41	29 49	53 36	13	12
26	25 18	26 16	26 47	26 15	27 17	26 44	27 48	27 13	28 18	27 41	28 48	28 10	29 23	28 39	29 49	54 37	14	13
28	25 16	26 17	26 47	26 14	27 18	26 42	27 48	27 11	28 18	27 40	28 49	28 8	29 24	28 37	29 50	55 38	15	14
30	25 15	26 17	26 48	26 12	27 18	26 41	27 49	27 9	28 19	27 38	28 49	28 6	29 25	28 35	29 50	56 39	16	15
32	25 13	26 18	26 48	26 10	27 19	26 39	27 49	27 7	28 20	27 36	28 50	28 5	29 26	28 33	29 51	57 40	17	16
34	25 11	26 18	26 49	26 9	27 19	26 37	27 50	27 5	28 21	27 34	28 51	28 3	29 27	28 31	29 52	58 41	18	17
36	25 10	26 19	26 49	26 7	27 20	26 35	27 50	27 4	28 21	27 33	28 51	28 1	29 28	28 30	29 52	59 42	19	18
38	25 8	26 19	26 50	26 5	27 20	26 34	27 51	27 2	28 22	27 31	28 52	27 59	29 29	28 28	29 53	60 43	20	19
40	25 7	26 20	26 50	26 4	27 21	26 32	27 51	27 0	28 22	27 29	28 52	27 57	29 30	28 26	29 53	61 44	21	20
42	25 5	26 20	26 51	26 2	27 21	26 30	27 52	26 58	28 23	27 27	28 53	27 56	29 31	28 24	29 54	62 45	22	21
44	25 3	26 21	26 51	26 0	27 22	26 29	27 52	26 57	28 23	27 26	28 53	27 54	29 32	28 22	29 54	63 46	23	22
46	25 2	26 21	26 52	25 59	27 22	26 27	27 53	26 56	28 24	27 24	28 54	27 52	29 33	28 21	29 55	64 47	24	23
48	25 0	26 22	26 52	25 57	27 23	26 25	27 54	26 54	28 24	27 22	28 54	27 50	29 34	28 19	29 56	65 48	25	24
50	24 59	26 22	26 53	25 55	27 23	26 24	27 54	26 52	28 25	27 20	28 55	27 48	29 35	28 17	29 56	66 49	26	25
52	24 57	26 23	26 54	25 54	27 24	26 22	27 55	26 50	28 26	27 18	28 56	27 47	29 36	28 15	29 57	67 50	27	26
54	24 55	26 23	26 54	25 52	27 25	26 20	27 56	26 48	28 26	27 17	28 56	27 45	29 37	28 13	29 57	68 51	28	27
56	24 54	26 24	26 55	25 50	27 25	26 18	27 56	26 47	28 27	27 15	28 57	27 43	29 38	28 11	29 58	69 52	29	28
58	24 52	26 24	26 55	25 48	27 26	26 17	27 56	26 45	28 27	27 13	28 57	27 41	29 39	28 10	29 58	70 53	30	29

(62° and 63°)		The Correction of the Moon's Altitude, and the Aux. Angle A.														(w.)	
App. Alt.	Minutes of Moon's Hor. Parallax.														Seconds of H. P.		
	54'	55'	56'	57'	58'	59'	60'	61'	54'	55'	56'	57'	58'	59'	60'	61'	
62	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	
0	24 50	26 25	25 19	26 50	25 47	27 26	26 15	27 57	26 43	28 27	27 11	28 58	27 39	29 28	28 8	29 59	
2	24 49	26 25	25 17	26 56	25 46	27 27	26 13	27 57	26 41	28 28	27 10	28 58	27 38	29 29	28 6	30 0	
4	24 47	26 26	25 15	26 57	25 43	27 27	26 12	27 58	26 40	28 28	27 8	28 59	27 36	29 29	28 4	30 0	
6	24 46	26 26	25 14	26 57	25 42	27 28	26 10	27 58	26 38	28 29	27 6	29 0	27 34	29 30	28 2	30 1	
8	24 44	26 27	25 12	26 58	25 40	27 28	26 8	27 59	26 36	28 29	27 4	29 0	27 32	29 31	28 0	30 1	
10	24 42	26 27	25 10	26 58	25 38	27 29	26 6	27 59	26 34	28 30	27 2	29 1	27 30	29 31	27 58	30 2	
12	24 41	26 28	25 9	26 59	25 37	27 29	26 5	28 0	26 33	28 30	27 1	29 1	27 29	29 32	27 57	30 2	
14	24 39	26 28	25 7	26 59	25 35	27 30	26 3	28 0	26 31	28 31	26 59	29 2	27 27	29 32	27 55	30 3	
16	24 37	26 29	25 6	27 0	25 33	27 30	26 1	28 1	26 29	28 32	26 57	29 2	27 25	29 33	27 53	30 3	
18	24 36	26 29	25 4	27 0	25 32	27 31	26 0	28 1	26 27	28 32	26 56	29 3	27 23	29 33	27 51	30 4	
20	24 34	26 30	25 2	27 1	25 30	27 31	25 58	28 2	26 26	28 33	26 54	29 3	27 21	29 34	27 49	30 4	
22	24 33	26 30	25 0	27 1	25 28	27 32	26 56	28 2	26 24	28 33	26 52	29 4	27 20	29 34	27 47	30 4	
24	24 31	26 31	24 59	27 2	25 27	27 32	26 54	28 3	26 22	28 34	26 50	29 4	27 18	29 35	27 46	30 4	
26	24 29	26 31	24 57	27 2	25 26	27 33	26 53	28 3	26 20	28 34	26 48	29 5	27 16	29 36	27 44	30 4	
28	24 28	26 32	24 55	27 3	25 25	27 33	26 51	28 4	26 19	28 35	26 46	29 5	27 14	29 36	27 42	30 4	
30	24 26	26 32	24 54	27 3	25 21	27 34	26 49	28 4	26 17	28 36	26 45	29 6	27 12	29 37	27 40	30 4	
32	24 24	26 33	24 52	27 4	25 20	27 34	26 47	28 5	26 15	28 36	26 43	29 6	27 10	29 37	27 38	30 4	
34	24 23	26 33	24 50	27 4	25 18	27 35	26 46	28 5	26 13	28 36	26 41	29 7	27 9	29 38	27 36	30 4	
36	24 21	26 34	24 49	27 5	25 16	27 35	26 44	28 6	26 12	28 37	26 39	29 8	27 7	29 38	27 34	30 4	
38	24 20	26 34	24 47	27 5	25 15	27 36	26 42	28 6	26 10	28 37	26 37	29 8	27 6	29 39	27 33	30 4	
40	24 18	26 35	24 45	27 6	25 13	27 36	26 41	28 7	26 8	28 38	26 36	29 9	27 5	29 39	27 31	30 4	
42	24 16	26 35	24 44	27 6	25 11	27 37	26 39	28 8	26 6	28 38	26 34	29 9	27 4	29 40	27 29	30 4	
44	24 15	26 36	24 42	27 7	25 10	27 37	26 37	28 8	26 5	28 39	26 32	29 10	27 3	29 40	27 27	30 4	
46	24 13	26 36	24 41	27 7	25 8	27 38	26 35	28 9	26 3	28 39	26 30	29 10	26 58	29 41	27 25	30 4	
48	24 11	26 37	24 39	27 8	25 6	27 38	26 34	28 9	26 1	28 40	26 29	29 11	26 56	29 42	27 23	30 4	
50	24 10	26 37	24 37	27 8	25 5	27 39	26 32	28 10	25 59	28 41	26 27	29 11	26 54	29 42	27 22	30 4	
52	24 8	26 38	24 36	27 9	25 3	27 39	26 30	28 10	25 58	28 41	26 25	29 12	26 52	29 43	27 20	30 4	
54	24 6	26 38	24 34	27 9	25 0	27 40	26 28	28 11	25 56	28 42	26 23	29 12	26 51	29 43	27 18	30 4	
56	24 5	26 39	24 32	27 10	24 59	27 40	26 27	28 11	25 54	28 42	26 21	29 13	26 49	29 44	27 16	30 4	
58	24 3	26 39	24 31	27 10	24 58	27 41	26 25	28 12	25 52	28 43	26 20	29 13	26 47	29 44	27 14	30 4	
63	54'	55'	56'	57'	58'	59'	60'	61'	54'	55'	56'	57'	58'	59'	60'	61'	
0	24 22	26 40	24 29	27 11	24 56	27 41	25 23	28 12	25 51	28 43	26 18	29 14	26 45	29 46	27 12	30 16	
2	24 0	26 40	24 27	27 11	24 54	27 42	25 22	28 13	25 49	28 44	26 16	29 15	26 43	29 45	27 11	30 16	
4	23 58	26 41	24 26	27 12	24 53	27 42	25 20	28 13	25 47	28 44	26 14	29 16	26 41	29 46	27 9	30 17	
6	23 57	26 41	24 24	27 12	24 51	27 43	25 18	28 14	25 45	28 45	26 13	29 16	26 40	29 47	27 7	30 17	
8	23 55	26 42	24 22	27 13	24 49	27 43	25 16	28 14	25 44	28 45	26 11	29 16	26 38	29 47	27 5	30 18	
10	23 53	26 42	24 20	27 13	24 48	27 44	25 15	28 15	25 42	28 46	26 9	29 17	26 36	29 48	27 3	30 18	
12	23 52	26 43	24 19	27 14	24 46	27 44	25 13	28 15	25 40	28 46	26 7	29 17	26 34	29 48	27 1	30 19	
14	23 50	26 43	24 17	27 14	24 44	27 45	25 11	28 16	25 38	28 47	26 5	29 18	26 32	29 49	26 59	30 20	
16	23 48	26 44	24 15	27 15	24 42	27 45	25 9	28 16	25 37	28 47	26 4	29 18	26 31	29 49	26 58	30 20	
18	23 47	26 44	24 14	27 15	24 41	27 46	25 8	28 17	25 36	28 48	26 2	29 19	26 29	29 50	26 56	30 21	
20	23 45	26 44	24 12	27 15	24 39	27 46	25 6	28 17	25 33	28 48	26 0	29 19	26 27	29 50	26 54	30 21	
22	23 44	26 45	24 10	27 16	24 37	27 47	25 4	28 18	25 31	28 49	25 58	29 20	26 26	29 51	26 52	30 21	
24	23 42	26 45	24 9	27 16	24 36	27 47	25 3	28 18	25 29	28 49	25 56	29 20	26 23	29 51	26 50	30 22	
26	23 40	26 46	24 7	27 17	24 34	27 48	25 1	28 19	25 28	28 50	25 55	29 21	26 21	29 52	26 48	30 23	
28	23 39	26 46	24 5	27 17	24 32	27 48	24 59	28 19	25 26	28 50	25 53	29 21	26 20	29 52	26 46	30 23	
30	23 37	26 47	24 4	27 18	24 30	27 49	24 57	28 20	25 24	28 51	25 51	29 22	26 18	29 53	26 44	30 24	
32	23 35	26 47	24 2	27 18	24 29	27 49	24 56	28 20	25 22	28 51	25 49	29 22	26 16	29 53	26 43	30 24	
34	23 34	26 48	24 0	27 19	24 27	27 50	24 54	28 21	25 21	28 52	25 47	29 23	26 14	29 54	26 41	30 25	
36	23 32	26 48	23 59	27 19	24 25	27 50	24 52	28 21	25 19	28 52	25 45	29 23	26 12	29 54	26 39	30 25	
38	23 30	26 49	23 57	27 20	24 24	27 51	24 50	28 22	25 17	28 53	25 44	29 24	26 10	29 55	26 37	30 26	
40	23 29	26 49	23 55	27 20	24 23	27 51	24 49	28 22	25 15	28 53	25 42	29 24	26 8	29 55	26 35	30 26	
42	23 27	26 50	23 54	27 21	24 20	27 52	24 47	28 23	25 13	28 54	25 40	29 25	26 6	29 56	26 33	30 27	
44	23 25	26 50	23 52	27 21	24 18	27 52	24 45	28 23	25 12	28 54	25 38	29 25	26 4	29 56	26 31	30 28	
46	23 24	26 51	23 50	27 22	24 17	27 53	24 43	28 24	25 10	28 55	25 36	29 26	26 2	29 57	26 30	30 28	
48	23 22	26 51	23 49	27 22	24 15	27 53	24 42	28 24	25 8	28 55	25 35	29 26	26 0	29 57	26 28	30 29	
50	23 20	26 52	23 47	27 23	24 13	27 54	24 40	28 25	25 6	28 56	25 33	29 27	25 59	29 58	26 26	30 30	
52	23 19	26 52	23 45	27 23	24 12	27 54	24 38	28 25	25 5	28 56	25 31	29 28	25 57	29 59	26 24	30 30	
54	23 17	26 53	23 44	27 24	24 10	27 55	24 36	28 26	25 3	28 57	25 29	29 28	25 56	29 59	26 22	30 30	
56	23 16	26 53	23 42	27 24	24 8	27 55	24 35	28 26	25 1	28 57	25 27	29 29	25 54	30 0	26 20	30 31	
58	23 14	26 54	23 40	27 25	24 6	27 56	24 33	28 27	24 59	28 58	25 26	29 29	25 52	30 1	26 18	30 31	

(66° and 67°) The Correction of the Moon's Altitude, and the Aux. Angle A.																	(w.)	
App. Alt.	Minutes of Moon's Hor. Parallax.																Seconds of H. P.	
	54'		55'		56'		57'		58'		59'		60'		61'		"	"
66°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	"	"
0'	21 32	27 21	21 57	27 53	22 21	28 24	22 45	28 56	23 10	29 28	23 34	29 59	23 59	30 31	24 23	31 3	1	0
2	21 31	27 22	21 56	27 53	22 19	28 25	22 44	28 57	23 8	29 28	23 32	29 58	23 57	30 31	24 21	31 3	2	1
4	21 29	27 22	21 53	27 54	22 18	28 26	22 42	28 57	23 6	29 29	23 31	29 58	23 55	30 32	24 19	31 4	3	2
6	21 27	27 23	21 52	27 54	22 16	28 26	22 40	28 57	23 4	29 29	23 29	29 58	23 53	30 32	24 17	31 4	4	3
8	21 26	27 23	21 50	27 55	22 14	28 26	22 38	28 58	23 3	29 30	23 27	29 58	23 51	30 33	24 16	31 5	5	4
10	21 24	27 23	21 48	27 55	22 12	28 27	22 37	28 58	23 1	29 30	23 25	29 58	23 49	30 33	24 14	31 5	6	5
12	21 22	27 24	21 46	27 56	22 11	28 27	22 35	28 59	22 59	29 30	23 23	29 58	23 47	30 34	24 12	31 6	7	6
14	21 20	27 24	21 45	27 56	22 9	28 28	22 33	28 59	22 57	29 31	23 21	29 58	23 45	30 34	24 10	31 6	8	7
16	21 19	27 25	21 43	27 56	22 7	28 28	22 31	29 0	22 56	29 31	23 19	29 58	23 44	30 35	24 8	31 6	9	8
18	21 17	27 25	21 41	27 57	22 5	28 28	22 29	29 0	22 54	29 32	23 18	29 58	23 42	30 35	24 6	31 7	10	9
20	21 15	27 25	21 39	27 57	22 3	28 29	22 28	29 1	22 52	29 32	23 16	29 58	23 40	30 36	24 4	31 7	11	10
22	21 14	27 26	21 38	27 58	22 2	28 30	22 26	29 1	22 50	29 33	23 14	29 58	23 38	30 36	24 2	31 8	12	11
24	21 12	27 26	21 36	27 58	22 0	28 30	22 24	29 1	22 48	29 33	23 13	29 58	23 36	30 37	24 0	31 8	13	12
26	21 10	27 27	21 34	27 59	21 58	28 30	22 22	29 2	22 46	29 34	23 10	29 58	23 34	30 37	23 58	31 9	14	13
28	21 9	27 27	21 33	27 59	21 57	28 31	22 21	29 2	22 44	29 34	23 8	29 58	23 32	30 38	23 56	31 9	15	14
30	21 7	27 28	21 31	27 59	21 55	28 31	22 19	29 3	22 43	29 35	23 7	29 58	23 30	30 38	23 54	31 10	16	15
32	21 5	27 28	21 29	28 0	21 53	28 32	22 17	29 3	22 41	29 35	23 5	29 58	23 29	30 38	23 53	31 10	17	16
34	21 4	27 29	21 27	28 0	21 51	28 32	22 15	29 4	22 39	29 36	23 3	29 58	23 27	30 39	23 51	31 11	18	17
36	21 2	27 29	21 26	28 1	21 50	28 32	22 13	29 4	22 37	29 36	23 1	29 58	23 25	30 39	23 49	31 11	19	18
38	21 0	27 29	21 24	28 1	21 48	28 33	22 12	29 5	22 35	29 36	22 59	29 58	23 23	30 40	23 47	31 12	20	19
40	20 58	27 30	21 22	28 2	21 46	28 33	22 10	29 5	22 34	29 37	22 57	29 58	23 21	30 40	23 45	31 12	21	20
42	20 57	27 30	21 21	28 2	21 44	28 34	22 8	29 6	22 32	29 37	22 55	29 58	23 19	30 41	23 43	31 13	22	21
44	20 55	27 31	21 19	28 2	21 43	28 34	22 6	29 6	22 30	29 38	22 54	29 58	23 17	30 41	23 41	31 13	23	22
46	20 53	27 31	21 17	28 3	21 41	28 35	22 4	29 7	22 28	29 38	22 52	29 58	23 15	30 42	23 39	31 14	24	23
48	20 52	27 31	21 16	28 3	21 39	28 35	22 3	29 7	22 26	29 39	22 50	29 58	23 13	30 42	23 37	31 14	25	24
50	20 50	27 32	21 14	28 3	21 37	28 36	22 1	29 8	22 25	29 39	22 48	29 58	23 11	30 43	23 35	31 14	26	25
52	20 48	27 32	21 12	28 4	21 36	28 36	21 59	29 8	22 23	29 40	22 46	29 58	23 9	30 43	23 33	31 15	27	26
54	20 47	27 33	21 10	28 4	21 34	28 36	21 57	29 9	22 21	29 40	22 44	29 58	23 7	30 44	23 31	31 15	28	27
56	20 45	27 33	21 9	28 5	21 32	28 37	21 56	29 9	22 19	29 40	22 43	29 58	23 5	30 44	23 29	31 16	29	28
58	20 43	27 34	21 7	28 5	21 30	28 37	21 54	29 10	22 17	29 41	22 41	29 58	23 3	30 45	23 28	31 16	30	29
60	20 42	27 34	21 5	28 6	21 28	28 38	21 52	29 10	22 15	29 41	22 39	29 58	23 1	30 46	23 26	31 17	31	30
62	20 40	27 34	21 3	28 6	21 27	28 38	21 50	29 10	22 14	29 42	22 37	29 58	22 59	30 46	23 24	31 17	32	31
64	20 38	27 35	21 1	28 7	21 25	28 39	21 49	29 10	22 12	29 42	22 35	29 58	22 57	30 46	23 22	31 18	33	32
66	20 36	27 35	20 59	28 7	21 23	28 39	21 47	29 11	22 10	29 43	22 33	29 58	22 55	30 47	23 20	31 18	34	33
68	20 35	27 36	20 58	28 8	21 22	28 39	21 46	29 11	22 9	29 43	22 31	29 58	22 53	30 47	23 18	31 19	35	34
70	20 33	27 36	20 56	28 8	21 20	28 40	21 43	29 12	22 8	29 44	22 30	29 58	22 51	30 47	23 16	31 19	36	35
72	20 31	27 36	20 55	28 9	21 18	28 40	21 42	29 12	22 7	29 44	22 28	29 58	22 49	30 48	23 14	31 20	37	36
74	20 30	27 37	20 53	28 9	21 16	28 41	21 40	29 13	22 6	29 44	22 26	29 58	22 47	30 48	23 12	31 20	38	37
76	20 28	27 37	20 51	28 9	21 14	28 41	21 38	29 13	22 5	29 45	22 24	29 58	22 45	30 49	23 10	31 21	39	38
78	20 26	27 38	20 49	28 10	21 13	28 41	21 37	29 13	22 4	29 45	22 22	29 58	22 43	30 49	23 8	31 21	40	39
80	20 25	27 38	20 48	28 10	21 11	28 42	21 36	29 14	22 3	29 46	22 20	29 58	22 41	30 49	23 6	31 21	41	40
82	20 23	27 39	20 46	28 10	21 9	28 42	21 33	29 14	22 2	29 46	22 18	29 58	22 39	30 50	23 4	31 22	42	41
84	20 21	27 39	20 44	28 11	21 7	28 43	21 31	29 15	22 1	29 47	22 16	29 58	22 37	30 50	23 2	31 22	43	42
86	20 19	27 39	20 43	28 11	21 5	28 43	21 29	29 15	22 0	29 47	22 15	29 58	22 35	30 51	23 0	31 23	44	43
88	20 18	27 40	20 41	28 12	21 4	28 44	21 27	29 16	21 59	29 47	22 13	29 58	22 33	30 51	22 58	31 23	45	44
90	20 16	27 40	20 39	28 12	21 2	28 44	21 25	29 16	21 48	29 48	22 11	29 58	22 31	30 52	22 56	31 24	46	45
92	20 14	27 41	20 37	28 13	21 0	28 44	21 24	29 16	21 46	29 48	22 9	29 58	22 29	30 52	22 54	31 24	47	46
94	20 13	27 41	20 36	28 13	20 59	28 45	21 22	29 17	21 44	29 49	22 7	29 58	22 27	30 53	22 52	31 25	48	47
96	20 11	27 41	20 34	28 13	20 57	28 45	21 20	29 17	21 42	29 49	22 5	29 58	22 25	30 53	22 50	31 25	49	48
98	20 9	27 42	20 32	28 14	20 55	28 46	21 18	29 18	21 41	29 50	22 3	29 58	22 23	30 54	22 48	31 26	50	49
100	20 8	27 42	20 30	28 14	20 53	28 46	21 16	29 18	21 39	29 50	22 1	29 58	22 21	30 54	22 46	31 26	51	50
102	20 6	27 43	20 29	28 15	20 51	28 47	21 14	29 19	21 37	29 51	21 59	29 58	22 19	30 55	22 44	31 27	52	51
104	20 4	27 43	20 27	28 15	20 50	28 47	21 12	29 19	21 35	29 51	21 58	29 58	22 17	30 55	22 42	31 27	53	52
106	20 2	27 43	20 25	28 15	20 48	28 47	21 11	29 20	21 33	29 52	21 56	29 58	22 15	30 56	22 40	31 28	54	53
108	20 1	27 44	20 23	28 16	20 46	28 48	21 9	29 20	21 31	29 52	21 54	29 58	22 13	30 56	22 38	31 28	55	54
110	19 59	27 44	20 22	28 16	20 44	28 48	21 7	29 20	21 30	29 52	21 52	29 58	22 11	30 56	22 36	31 29	56	55
112	19 57	27 45	20 20	28 17	20 43	28 49	21 5	29 21	21 28	29 53	21 50	29 58	22 9	30 57	22 34	31 29	57	56
114	19 56	27 45	20 18	28 17	20 41	28 49	21 3	29 21	21 26	29 53	21 49	29 58	22 7	30 57	22 32	31 30	58	57
116	19 54	27 46	20 17	28 18	20 39	28 50	21 2	29 22	21 24	29 54	21 47	29 58	22 5	30 58	22 30	31 30	59	58
118	19 52	27 46	20 15	28 18	20 37	28 50	21 0	29 22	21 22	29 54	21 45	29 58	22 3	30 58	22 28	31 30	60	59

(w.)		The Correction of the Moon's Altitude, and the Aux. Angle A. (68° and 69°)																Increments of H P					
App Alt	Minutes of Moon's Hor. Parallax.																Corr. + 60"	A 60°					
	54'	55'	56'	57'	58'	59'	60'	61'	62'	63'	64'	65'	66'	67'	68'	69'							
68	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°					
0	19 51	27 46	20 13	20 18	20 36	28 40	20 58	29 23	21 20	29 55	21 43	30 27	22 58	30 28	31 31	31	1 0	1					
2	19 49	27 47	20 11	20 18	20 34	28 31	20 56	29 20	21 19	29 55	21 41	30 27	22 58	30 28	31 31	31	1 0	1					
4	19 47	27 47	20 10	20 18	20 32	28 20	20 54	29 23	21 17	29 55	21 39	30 28	22 57	30 28	31 31	31	1 0	1					
6	19 45	27 48	20 8	20 20	20 30	28 52	20 53	29 24	21 15	29 56	21 37	30 28	22 57	30 28	31 31	31	1 0	1					
8	19 44	27 48	20 6	20 20	20 28	28 52	20 51	29 24	21 14	29 56	21 35	30 28	22 58	30 28	31 31	31	1 0	1					
10	19 42	27 48	20 4	20 20	20 27	28 53	20 49	29 25	21 11	29 57	21 34	30 29	22 56	30 28	31 31	31	1 0	1					
12	19 40	27 49	20 3	20 21	20 25	28 53	20 47	29 26	21 9	29 57	21 32	30 29	22 54	30 28	31 31	31	1 0	1					
14	19 38	27 49	20 1	20 21	20 23	28 53	20 45	29 26	21 8	29 58	21 30	30 29	22 52	30 28	31 31	31	1 0	1					
16	19 37	27 50	19 59	20 22	20 21	28 54	20 44	29 26	21 6	29 58	21 28	30 29	22 50	30 28	31 31	31	1 0	1					
18	19 35	27 50	19 57	20 22	20 19	28 54	20 42	29 26	21 4	29 58	21 26	30 29	22 48	30 28	31 31	31	1 0	1					
20	19 33	27 50	19 56	20 22	20 18	28 55	20 40	29 27	21 2	29 59	21 24	30 31	22 46	30 28	31 31	31	1 0	1					
22	19 32	27 51	19 54	20 23	20 16	28 55	20 38	29 27	21 0	29 59	21 22	30 31	22 44	30 28	31 31	31	1 0	1					
24	19 30	27 51	19 52	20 23	20 14	28 55	20 36	29 28	20 58	30	0 21	30 32	22 42	30 28	31 31	31	1 0	1					
26	19 28	27 51	19 50	20 24	20 12	28 56	20 34	29 28	20 56	30	0 21	30 32	22 41	30 28	31 31	31	1 0	1					
28	19 27	27 52	19 49	20 24	20 11	28 56	20 33	29 28	20 55	30	0 21	30 33	22 40	30 28	31 31	31	1 0	1					
30	19 25	27 52	19 47	20 24	20 9	28 57	20 31	29 29	20 53	30	1 21	30 33	22 37	30 28	31 31	31	1 0	1					
32	19 23	27 53	19 45	20 25	20 7	28 57	20 29	29 29	20 51	30	1 21	30 33	22 35	30 28	31 31	31	1 0	1					
34	19 21	27 53	19 43	20 25	20 5	28 57	20 27	29 30	20 49	30	2 21	30 34	22 33	30 28	31 31	31	1 0	1					
36	19 20	27 53	19 42	20 26	20 3	28 58	20 25	29 30	20 47	30	2 21	30 34	22 31	30 28	31 31	31	1 0	1					
38	19 18	27 54	19 40	20 26	20 1	28 58	20 24	29 30	20 45	30	2 21	30 35	22 29	30 28	31 31	31	1 0	1					
40	19 16	27 54	19 38	20 26	20 0	28 59	20 22	29 31	20 44	30	3 21	30 35	22 27	30 28	31 31	31	1 0	1					
42	19 15	27 55	19 36	20 27	19 58	28 59	20 20	29 31	20 42	30	3 21	30 36	22 25	30 28	31 31	31	1 0	1					
44	19 13	27 55	19 35	20 27	19 56	28 59	20 18	29 32	20 40	30	4 21	30 36	22 23	30 28	31 31	31	1 0	1					
46	19 11	27 55	19 33	20 28	19 55	29	20 16	29 32	20 38	30	4 21	30 36	22 21	30 28	31 31	31	1 0	1					
48	19 9	27 56	19 31	20 28	19 53	29	20 15	29 32	20 36	30	5 20	30 37	22 19	30 28	31 31	31	1 0	1					
50	19 8	27 56	19 29	20 28	19 51	29	20 13	29 33	20 34	30	5 20	30 37	22 18	30 28	31 31	31	1 0	1					
52	19 6	27 57	19 28	20 29	19 49	29	20 11	29 33	20 32	30	6 20	30 38	22 16	30 28	31 31	31	1 0	1					
54	19 4	27 57	19 26	20 29	19 47	29	20 9	29 34	20 31	30	6 20	30 38	22 14	30 28	31 31	31	1 0	1					
56	19 3	27 57	19 24	20 29	19 46	29	20 7	29 34	20 29	30	6 20	30 39	22 12	30 28	31 31	31	1 0	1					
58	19 1	27 58	19 22	20 30	19 44	29	20 5	29 34	20 27	30	7 20	30 39	22 10	30 28	31 31	31	1 0	1					
69	54'	55'	56'	57'	58'	59'	60'	61'	62'	63'	64'	65'	66'	67'	68'	69'	Corr. +	A 60°					
0	18 59	27 58	19 21	28 30	19 42	29	3 20	4 20	35	20	25	30	7 20	47	30	39	21	8 31	12 21	30 31	44		
2	18 57	27 58	19 19	28 31	19 40	29	3 20	4 20	35	20	23	30	7 20	45	30	40	21	6 31	12 21	28 31	44		
4	18 56	27 59	19 17	28 31	19 38	29	3 20	4 20	36	20	21	30	8 20	43	30	40	21	4 31	12 21	26 31	45		
6	18 54	27 59	19 15	28 32	19 37	29	4 19	5 18	29	36	20	20	8 20	41	30	41	21	2 31	13 21	24 31	45		
8	18 52	28 0	19 14	28 32	19 35	29	4 19	5 18	29	36	20	18	9 20	39	30	41	21	0 31	13 21	22 31	46		
10	18 50	28 0	19 12	28 32	19 33	29	5 19	5 18	29	37	20	16	9 20	37	30	41	20	38	31	14 21	20 31	46	
12	18 49	28 0	19 10	28 33	19 31	29	5 19	5 18	29	37	20	14	9 20	35	30	42	20	57	31	12 21	18 31	46	
14	18 47	28 1	19 8	28 33	19 29	29	5 19	5 18	29	38	20	12	10 20	33	30	42	20	56	31	10 21	16 31	47	
16	18 45	28 1	19 7	28 33	19 28	29	6 19	4 29	38	20	10	30	10 20	31	30	43	20	53	31	8 21	14 31	47	
18	18 44	28 1	19 5	28 34	19 26	29	6 19	4 29	38	20	8 30	11	20	30	30	43	20	51	31	6 21	12 31	48	
20	18 42	28 2	19 3	28 34	19 24	29	6 19	4 29	39	20	6 30	11	20	28	30	43	20	49	31	4 21	10 31	48	
22	18 40	28 2	19 1	28 34	19 22	29	7 19	4 29	39	20	5 30	11	20	26	30	44	20	47	31	2 21	8 31	49	
24	18 38	28 3	18 59	28 35	19 21	29	7 19	4 29	40	20	3 30	12	20	24	30	44	20	45	31	0 21	6 31	49	
26	18 37	28 3	18 58	28 35	19 19	29	8 19	4 29	40	20	1 30	12	20	22	30	45	20	43	31	17 21	4 31	49	
28	18 35	28 3	18 56	28 36	19 17	29	8 19	4 29	40	10	59	30	13	20	20	30	45	20	41	31	17 21	2 31	50
30	18 33	28 4	18 54	28 36	19 15	29	8 19	4 29	41	19	57	30	13	20	18	30	45	20	39	31	18 21	0 31	50
32	18 31	28 4	18 52	28 36	19 13	29	9 19	4 29	41	19	55	30	13	20	16	30	46	20	37	31	18 20	58 31	51
34	18 30	28 4	18 51	28 37	19 12	29	9 19	4 29	42	19	53	30	14	20	14	30	46	20	35	31	19 20	56 31	51
36	18 28	28 5	18 49	28 37	19 10	29	10 19	4 29	42	19	52	30	14	20	13	30	47	20	33	31	19 20	54 31	51
38	18 26	28 5	18 47	28 38	19 8	29	10 19	4 29	42	19	50	30	15	20	11	30	47	20	32	31	19 20	52 31	52
40	18 24	28 5	18 45	28 38	19 6	29	10 19	4 29	43	19	48	30	15	20	9 30	47	20	30	31	19 20	50 31	52	
42	18 23	28 6	18 44	28 38	19 4	29	11 19	4 29	43	19	46	30	15	20	7 30	48	20	28	31	20 20	48 31	53	
44	18 21	28 6	18 42	28 39	19 3	29	11 19	4 29	43	19	44	30	16	20	5 30	48	20	26	31	21 20	47 31	53	
46	18 19	28 6	18 40	28 39	19 1	29	11 19	4 29	44	19	42	30	16	20	3 30	49	20	24	31	21 20	45 31	54	
48	18 18	28 7	18 38	28 39	18 59	29	12 19	4 29	44	19	40	30	17	20	1 30	49	20	22	31	22 20	43 31	54	
50	18 16	28 7	18 37	28 40	18 57	29	12 19	4 29	45	19	39	30	17	19	59	30	50	20	20	31	22 20	41 31	54
52	18 14	28 8	18 35	28 40	18 55	29	13 19	4 29	45	19	37	30	17	19	57	30	50	20	18	31	22 20	39 31	55
54	18 12	28 8	18 33	28 41	18 54	29	13 19	4 29	45	19	35	30	18	19	55	30	50						

and 71°) The Correction of the Moon's Altitude, and the Aux. Angle A. (w.)

Minutes of Moon's Hor. Parallax.														Seconds of H P		
54'		55'		56'		57'		58'		59'		60'		61'		
orr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	
+	60"	+	60"	+	60"	+	60"	+	60"	+	60"	+	60"	+	60"	
8 7 23	0	18 28 28 42	18 48	29 14 19	9 29 47	10 29 30 19	19 50	30 52	20 10	31 24	20 31	31 56	21 01	32 11	1	0 1
8 8 23	10	18 26 28 42	18 46	29 15 19	7 29 47	19 27 30 19	19 48	30 52	20 8	31 24	20 29	31 57	20 31	32 11	2	1 1
8 9 23	20	18 24 28 43	18 45	29 16 19	6 29 47	19 26 30 20	19 46	30 52	20 7	31 25	20 27	31 57	20 31	32 11	3	2 1
8 10 23	30	18 22 28 43	18 43	29 16 19	5 29 48	19 24 30 20	19 44	30 53	20 6	31 25	20 25	31 58	20 31	32 11	4	3 1
8 11 23	40	18 21 28 43	18 41	29 16 19	4 29 48	19 22 30 21	19 42	30 53	20 5	31 26	20 23	31 58	20 31	32 11	5	4 1
7 58 23	11	18 19 28 44	18 39	29 16 19	3 29 49	19 20 30 21	19 40	30 54	20 4	31 26	20 21	31 59	20 31	32 11	6	5 1
7 57 23	11	18 17 28 44	18 37	29 16 18 58	29 49	19 18 30 21	19 38	30 54	19 59	31 26	20 19	31 59	20 31	32 11	7	6 1
7 56 23	12	18 15 28 44	18 36	29 17 18 56	29 49	19 16 30 22	19 36	30 54	19 57	31 27	20 17	31 59	20 31	32 11	8	7 1
7 55 23	12	18 14 28 45	18 34	29 17 18 54	29 50	19 14 30 22	19 35	30 55	19 56	31 27	20 15	32 0	20 31	32 11	9	8 1
7 54 23	13	18 12 28 45	18 32	29 18 18 52	29 50	19 12 30 23	19 33	30 55	19 53	31 28	20 13	32 0	20 31	32 11	10	9 1
7 53 23	13	18 10 28 45	18 30	29 18 18 50	29 50	19 11 30 23	19 31	30 55	19 51	31 28	20 11	32 1	20 31	32 11	11	10 1
7 48 23	13	18 8 28 46	18 28	29 18 18 49	29 51	19 9 30 23	19 29	30 56	19 49	31 29	20 9	32 1	20 31	32 11	12	11 1
7 46 23	14	18 6 28 46	18 27	29 19 18 47	29 51	19 7 30 24	19 27	30 56	19 47	31 29	20 7	32 1	20 31	32 11	13	12 1
7 45 23	14	18 5 28 47	18 25	29 19 18 45	29 52	19 5 30 24	19 25	30 57	19 45	31 29	20 5	32 2	20 31	32 11	14	13 1
7 43 23	14	18 3 28 47	18 23	29 19 18 43	29 52	19 3 30 25	19 23	30 57	19 43	31 30	20 3	32 2	20 31	32 11	15	14 1
7 41 23	15	18 2 28 47	18 21	29 20 18 41	29 52	19 1 30 25	19 21	30 58	19 41	31 30	20 1	32 2	20 31	32 11	16	15 1
7 39 23	15	17 59 28 48	18 19	29 20 18 39	29 53	18 59 30 25	19 19	30 58	19 39	31 31	19 59	32 2	20 31	32 11	17	16 1
7 38 23	15	17 58 28 48	18 18	29 21 18 38	29 53	18 58 30 26	19 18	30 58	19 37	31 31	19 58	32 2	20 31	32 11	18	17 1
7 36 23	16	17 56 28 48	18 16	29 21 18 36	29 54	18 56 30 26	19 16	30 59	19 36	31 31	19 56	32 2	20 31	32 11	19	18 1
7 34 23	16	17 54 28 49	18 14	29 21 18 34	29 54	18 54 30 27	19 14	30 59	19 34	31 32	19 54	32 2	20 31	32 11	20	19 1
7 32 23	17	17 52 28 49	18 12	29 22 18 32	29 54	18 52 30 27	19 12	31 0	19 32	31 32	19 52	32 2	20 31	32 11	21	20 1
7 31 23	17	17 51 28 50	18 10	29 22 18 30	29 55	18 50 30 27	19 10	31 0	19 30	31 33	19 50	32 2	20 31	32 11	22	21 1
7 29 23	17	17 49 28 50	18 9	29 23 18 29	29 55	18 48 30 28	19 8	31 0	19 28	31 33	19 48	32 2	20 31	32 11	23	22 1
7 27 23	18	17 47 28 50	18 7	29 23 18 27	29 56	18 46 30 28	19 6	31 1	19 26	31 33	19 46	32 2	20 31	32 11	24	23 1
7 26 23	18	17 45 28 51	18 5	29 23 18 25	29 56	18 45 30 29	19 4	31 1	19 24	31 34	19 44	32 2	20 31	32 11	25	24 1
7 24 23	18	17 44 28 51	18 3	29 24 18 23	29 56	18 43 30 29	19 2	31 1	19 22	31 34	19 42	32 2	20 31	32 11	26	25 1
7 22 23	19	17 42 28 51	18 1	29 24 18 21	29 57	18 41 30 29	19 0	31 1	19 20	31 35	19 40	32 2	20 31	32 11	27	26 1
7 20 23	19	17 40 28 52	18 0	29 24 18 19	29 57	18 39 30 30	18 59	31 1	19 18	31 35	19 38	32 2	20 31	32 11	28	27 1
7 19 23	19	17 38 28 52	17 58	29 25 18 17	29 57	18 37 30 30	18 57	31 1	19 16	31 35	19 36	32 2	20 31	32 11	29	28 1
7 17 23	20	17 36 28 53	17 56	29 25 18 16	29 58	18 35 30 31	18 55	31 1	19 14	31 36	19 34	32 2	20 31	32 11	30	29 1
7 15 23	20	17 35 28 53	17 54	29 25 18 14	29 58	18 33 30 31	18 53	31 1	19 12	31 36	19 32	32 2	20 31	32 11	31	30 1
7 13 23	21	17 33 28 53	17 52	29 26 18 12	29 59	18 32 30 31	18 51	31 1	19 11	31 37	19 30	32 2	20 31	32 11	32	31 1
7 12 23	21	17 31 28 54	17 51	29 26 18 10	29 59	18 30 30 32	18 49	31 1	19 9	31 37	19 28	32 2	20 31	32 11	33	32 1
7 10 23	21	17 29 28 54	17 49	29 27 18 8	29 59	18 28 30 32	18 47	31 1	19 7	31 37	19 26	32 2	20 31	32 11	34	33 1
7 8 23	22	17 28 28 54	17 47	29 27 18 6	30 0	18 26 30 32	18 45	31 1	19 5	31 38	19 24	32 2	20 31	32 11	35	34 1
7 6 23	22	17 26 28 55	17 45	29 27 18 5	30 0	18 24 30 33	18 43	31 1	19 3	31 38	19 22	32 2	20 31	32 11	36	35 1
7 4 23	22	17 24 28 55	17 43	29 28 18 3	30 0	18 22 30 33	18 41	31 1	19 1	31 38	19 20	32 2	20 31	32 11	37	36 1
7 3 23	23	17 22 28 55	17 42	29 28 18 1	30 0	18 20 30 33	18 39	31 1	18 59	31 39	19 18	32 2	20 31	32 11	38	37 1
7 1 23	23	17 20 28 56	17 40	29 28 17 59	30 0	18 18 30 34	18 38	31 1	18 57	31 39	19 16	32 2	20 31	32 11	39	38 1
6 59 23	23	17 19 28 56	17 38	29 29 17 57	30 0	18 16 30 34	18 36	31 1	18 55	31 39	19 14	32 2	20 31	32 11	40	39 1
6 58 23	24	17 17 28 56	17 36	29 29 17 55	30 0	18 14 30 34	18 34	31 1	18 53	31 40	19 12	32 2	20 31	32 11	41	40 1
6 56 23	24	17 15 28 57	17 34	29 29 17 53	30 0	18 13 30 35	18 33	31 1	18 51	31 40	19 10	32 2	20 31	32 11	42	41 1
6 54 23	24	17 13 28 57	17 32	29 30 17 52	30 0	18 11 30 35	18 31	31 1	18 49	31 41	19 8	32 2	20 31	32 11	43	42 1
6 52 23	25	17 12 28 57	17 31	29 30 17 50	30 0	18 9 30 36	18 29	31 1	18 47	31 41	19 6	32 2	20 31	32 11	44	43 1
6 51 23	25	17 10 28 58	17 29	29 30 17 48	30 0	18 7 30 36	18 27	31 1	18 45	31 41	19 4	32 2	20 31	32 11	45	44 1
6 49 23	25	17 8 28 58	17 27	29 31 17 46	30 0	18 5 30 36	18 25	31 1	18 43	31 42	19 2	32 2	20 31	32 11	46	45 1
6 47 23	26	17 6 28 58	17 25	29 31 17 44	30 0	18 3 30 37	18 23	31 1	18 41	31 42	19 0	32 2	20 31	32 11	47	46 1
6 45 23	26	17 4 28 59	17 23	29 32 17 42	30 0	18 1 30 37	18 21	31 1	18 39	31 43	18 58	32 2	20 31	32 11	48	47 1
6 44 23	26	17 3 28 59	17 22	29 32 17 40	30 0	17 59 30 37	18 19	31 1	18 37	31 43	18 56	32 2	20 31	32 11	49	48 1
6 42 23	27	17 1 28 59	17 20	29 32 17 39	30 0	17 57 30 38	18 17	31 1	18 35	31 43	18 54	32 2	20 31	32 11	50	49 1
6 40 23	27	16 59 29 0	17 18	29 33 17 37	30 0	17 55 30 38	18 15	31 1	18 33	31 44	18 52	32 2	20 31	32 11	51	50 1
6 38 23	27	16 57 29 0	17 16	29 33 17 35	30 0	17 53 30 38	18 13	31 1	18 31	31 44	18 50	32 2	20 31	32 11	52	51 1
6 37 23	28	16 55 29 0	17 14	29 33 17 33	30 0	17 52 30 39	18 11	31 1	18 29	31 44	18 48	32 2	20 31	32 11	53	52 1
6 35 23	28	16 54 29 0	17 12	29 34 17 31	30 0	17 50 30 39	18 9	31 1	18 27	31 45	18 46	32 2	20 31	32 11	54	53 1
6 33 23	28	16 52 29 0	17 11	29 34 17 29	30 0	17 48 30 40	18 7	31 1	18 26	31 45	18 44	32 2	20 31	32 11	55	54 1
6 31 23	29	16 50 29 0	17 9	29 34 17 28	30 0	17 46 30 40	18 5	31 1	18 24	31 46	18 42	32 2	20 31	32 11	56	55 1
6 30 23	29	16 48 29 0	17 7	29 35 17 26	30 0	17 44 30 40	18 3	31 1	18 22	31 46	18 40	32 2	20 31	32 11	57	56 1
6 28 23	29	16 47 29 0	17 6	29 35 17 24	30 0	17 43 30 41	18 1	31 1	18 21	31 46	18 38	32 2	20 31	32 11	58	57 1
6 26 23	30	16 45 29 0	17 5	29 36 17 22	30 0	17 41 30 41	17 59	31 1	18 19	31 47	18 36	32 2	20 31	32 11	59	58 1
6 24 23	30	16 43 29 0	17 3	29 36 17 20	30 0	17 39 30 41	17 57	31 1	18 17	31 47	18 34	32 2	20 31	32 11	60	59 1

(w.) The Correction of the Moon's Altitude, and the Aux. Angle A. (78°)

App. Alt.	Minutes of Moon's Hor. Parallax.														72°
	54'		55'		56'		57'		58'		59'		60'		
	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	
	+	60"	+	60"	+	60"	+	60"	+	60"	+	60"	+	60"	
0'	16 23 28 30	15 41 29	3 17 0 29 36	17 18 30	9 17 37 30 42	17 56 31 15	18 14 31 47	18 32 3							
2	16 21 28 31	16 39 29	4 16 58 29 36	17 16 30	9 17 35 30 42	17 53 31 15	18 12 31 48	18 30 3							
4	16 19 28 31	16 38 29	4 16 56 29 37	17 15 30 10	17 33 30 42	17 52 31 15	18 10 31 48	18 28 3							
6	16 17 28 31	16 36 29	4 16 54 29 37	17 13 30 10	17 31 30 43	17 50 31 16	18 8 31 49	18 26 3							
8	16 16 28 32	16 34 29	5 16 52 29 37	17 11 30 10	17 29 30 43	17 48 31 16	18 6 31 49	18 24 3							
10	16 14 28 32	16 32 29	5 16 51 29 38	17 9 30 11	17 27 30 43	17 46 31 16	18 4 31 49	18 22 3							
12	16 12 28 32	16 30 29	5 16 49 29 38	17 7 30 11	17 25 30 44	17 44 31 17	18 2 31 50	18 20 3							
14	16 10 28 33	16 29 29	6 16 47 29 38	17 5 30 11	17 24 30 44	17 42 31 17	18 0 31 50	18 18 3							
16	16 9 28 33	16 27 29	6 16 46 29 39	17 3 30 12	17 22 30 45	17 40 31 17	17 58 31 50	18 16 3							
18	16 7 28 33	16 25 29	6 16 43 29 39	17 2 30 12	17 20 30 45	17 38 31 18	17 56 31 51	18 14 3							
20	16 5 28 34	16 23 29	6 16 41 29 39	17 0 30 12	17 18 30 45	17 36 31 18	17 54 31 51	18 12 3							
22	16 3 28 34	16 21 29	7 16 40 29 40	16 58 30 13	17 16 30 46	17 34 31 18	17 52 31 51	18 11 3							
24	16 2 28 34	16 20 29	7 16 38 29 40	16 56 30 13	17 14 30 46	17 32 31 19	17 50 31 52	18 9 3							
26	16 0 28 35	16 18 29	7 16 36 29 41	16 54 30 13	17 12 30 46	17 30 31 19	17 48 31 52	18 7 3							
28	16 58 28 35	16 16 29	8 16 34 29 41	16 52 30 14	17 10 30 47	17 28 31 19	17 46 31 52	18 5 3							
30	16 56 28 35	16 14 29	8 16 32 29 41	16 50 30 14	17 8 30 47	17 26 31 20	17 44 31 53	18 3 3							
32	16 54 28 35	16 12 29	8 16 31 29 42	16 49 30 14	17 6 30 47	17 25 31 20	17 43 31 53	18 1 3							
34	16 53 28 36	16 11 29	8 16 29 29 42	16 47 30 15	17 5 30 48	17 23 31 21	17 41 31 53	17 59 3							
36	16 51 28 36	16 9 29	9 16 27 29 42	16 46 30 15	17 3 30 48	17 21 31 21	17 39 31 54	17 57 3							
38	16 49 28 36	16 7 29	9 16 25 29 43	16 43 30 15	17 1 30 49	17 19 31 21	17 37 31 54	17 55 3							
40	16 47 30 37	16 5 29	10 16 23 29 43	16 41 30 16	16 59 30 49	17 17 31 22	17 35 31 54	17 53 3							
42	16 46 28 37	16 4 29	10 16 21 29 43	16 39 30 16	16 57 30 49	17 14 31 22	17 33 31 55	17 51 3							
44	16 44 28 37	16 2 29	10 16 20 29 43	16 37 30 16	16 55 30 49	17 12 31 22	17 31 31 55	17 49 3							
46	16 42 28 38	16 0 29	11 16 18 29 44	16 36 30 17	16 53 30 50	17 10 31 23	17 29 31 56	17 47 3							
48	16 40 28 38	15 58 29	11 16 16 29 44	16 34 30 17	16 51 30 50	17 9 31 23	17 27 31 56	17 45 3							
50	16 39 28 38	15 56 29	11 16 14 29 44	16 32 30 17	16 49 30 50	17 7 31 23	17 25 31 56	17 43 3							
52	16 37 28 39	15 55 29	12 16 12 29 45	16 30 30 18	16 48 30 51	17 5 31 24	17 23 31 57	17 41 3							
54	16 35 28 39	15 53 29	12 16 10 29 45	16 28 30 18	16 46 30 51	17 3 31 24	17 21 31 57	17 39 3							
56	16 33 28 39	15 51 29	12 16 9 29 45	16 26 30 18	16 44 30 51	17 1 31 24	17 19 31 57	17 37 3							
58	16 32 28 40	15 49 29	13 16 7 29 46	16 24 30 19	16 42 30 52	16 59 31 25	17 17 31 58	17 35 3							
73	54'	55'	56'	57'	58'	59'	60'	61'							
0'	15 30 20 40	15 47 29 13	16 5 29 46	16 22 30 19	16 40 30 52	16 57 31 25	17 15 31 58	17 33 3							
2	15 28 20 40	15 46 29 13	16 3 29 46	16 21 30 19	16 38 30 52	16 56 31 25	17 13 31 59	17 31 3							
4	15 26 20 40	15 44 29 14	16 1 29 47	16 19 30 20	16 36 30 53	16 54 31 26	17 11 31 59	17 29 3							
6	15 24 20 41	15 42 29 14	15 59 29 47	16 17 30 20	16 34 30 53	16 52 31 26	17 9 31 59	17 27 3							
8	15 23 20 41	15 40 29 14	15 58 29 47	16 15 30 20	16 32 30 53	16 50 31 26	17 7 32	0 17 25 3							
10	15 21 20 41	15 38 29 14	15 56 29 48	16 13 30 21	16 30 30 54	16 48 31 27	17 5 32	0 17 23 3							
12	15 19 20 42	15 37 29 15	15 54 29 48	16 11 30 21	16 28 30 54	16 46 31 27	17 3 32	0 17 21 3							
14	15 17 20 42	15 35 29 15	15 52 29 48	16 9 30 21	16 27 30 54	16 44 31 27	17 1 32	0 17 19 3							
16	15 16 20 42	15 33 29 15	15 50 29 48	16 7 30 22	16 25 30 55	16 42 31 28	16 59 32	0 17 17 3							
18	15 14 20 43	15 31 29 16	15 48 29 48	16 5 30 22	16 23 30 55	16 40 31 28	16 57 32	0 17 15 3							
20	15 12 20 43	15 29 29 16	15 46 29 49	16 4 30 22	16 21 30 55	16 38 31 28	16 55 32	0 17 13 3							
22	15 10 20 43	15 27 29 16	15 45 29 49	16 2 30 23	16 19 30 56	16 36 31 29	16 53 32	0 17 11 3							
24	15 9 20 44	15 26 29 17	15 43 29 50	16 0 30 23	16 17 30 56	16 34 31 29	16 51 32	0 17 9 3							
26	15 7 20 44	15 24 29 17	15 41 29 50	15 58 30 23	16 15 30 56	16 32 31 29	16 49 32	0 17 7 3							
28	15 5 20 44	15 22 29 17	15 39 29 50	15 56 30 24	16 13 30 57	16 30 31 30	16 47 32	0 17 5 3							
30	15 3 20 44	15 20 29 18	15 37 29 51	15 54 30 24	16 11 30 57	16 28 31 30	16 45 32	0 17 3 3							
32	15 1 20 45	15 18 29 18	15 36 29 51	15 53 30 24	16 9 30 57	16 27 31 30	16 44 32	0 17 1 3							
34	15 0 20 45	15 17 29 18	15 34 29 51	15 51 30 25	16 8 30 58	16 25 31 31	16 42 32	0 16 59 3							
36	14 58 20 45	15 15 29 19	15 32 29 52	15 49 30 25	16 6 30 58	16 23 31 31	16 40 32	0 16 57 3							
38	14 56 20 46	15 13 29 19	15 30 29 52	15 47 30 25	16 4 30 58	16 21 31 31	16 38 32	0 16 55 3							
40	14 54 20 46	15 11 29 19	15 28 29 52	15 45 30 25	16 2 30 59	16 19 31 32	16 36 32	0 16 53 3							
42	14 53 20 46	15 9 29 19	15 26 29 53	15 43 30 26	16 0 30 59	16 17 31 32	16 34 32	0 16 51 3							
44	14 51 20 47	15 8 29 20	15 25 29 53	15 41 30 26	15 58 30 59	16 15 31 32	16 32 32	0 16 49 3							
46	14 49 20 47	15 6 29 20	15 23 29 53	15 39 30 26	15 56 31	16 13 31 33	16 30 32	0 16 47 3							
48	14 47 20 47	15 4 29 20	15 21 29 54	15 38 30 27	15 54 31	16 11 31 33	16 28 32	0 16 45 3							
50	14 46 20 47	15 2 29 21	15 19 29 54	15 36 30 27	15 52 31	16 9 31 33	16 26 32	0 16 43 3							
52	14 44 20 48	15 0 29 21	15 17 29 54	15 34 30 27	15 50 31	16 7 31 34	16 24 32	0 16 41 3							
54	14 42 20 48	14 59 29 21	15 15 29 54	15 32 30 28	15 49 31	16 5 31 34	16 22 32	0 16 39 3							
56	14 40 20 48	14 57 29 22	15 13 29 55	15 30 30 28	15 47 31	16 3 31 34	16 20 32	0 16 37 3							
58	14 38 20 49	14 55 29 22	15 12 29 55	15 28 30 28	15 45 31	16 1 31 35	16 18 32	0 16 35 3							

(74° and 75°) The Correction of the Moon's Altitude, and the Aux. Angle A.

(w.)

P r	Minutes of Moon's Hor. Parallax.																Seconds of H. P.		
	54'		55'		56'		57'		58'		59'		60'		61'		"	C	A
	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°			
1	14 37	28 49	14 53	29 22	15 10	29 55	15 20	30 29	15 43	31	2 15	59	31 35	16 16	32	8 16	32	41	1
2	14 35	28 49	14 51	29 22	15	8 29	56	15 24	30 29	15 41	31	2 15	57	31 35	16 14	32	9 10	30	2
3	14 33	28 50	14 50	29 23	15	6 29	56	15 23	30 29	15 39	31	2 15	55	31 36	16 12	32	9 10	28	3
4	14 31	28 50	14 48	29 23	15	4 29	56	15 21	30 30	15 37	31	3 15	54	31 36	16 10	32	9 16	26	4
5	14 30	28 50	14 46	29 23	15	2 29	57	15 19	30 30	15 36	31	3 15	52	31 36	16	8 32	9 16	24	5
6	14 28	28 50	14 44	29 24	15	1 29	57	15 17	30 30	15 33	31	3 15	50	31 37	16	6 32	10 16	22	6
7	14 26	28 51	14 42	29 24	14 59	29	57	15 16	30 30	15 31	31	4 15	48	31 37	16	4 32	10 16	20	7
8	14 24	28 51	14 41	29 24	14 57	29	57	15 13	30 31	15 29	31	4 15	46	31 37	16	2 32	10 16	18	8
9	14 22	28 51	14 39	29 25	14 55	29	58	15 11	30 31	15 28	31	4 15	44	31 38	16	0 32	11 16	16	9
10	14 21	28 52	14 37	29 25	14 53	29	58	15	9 30	31	15 26	31	5 15	42	31 38	15 58	32	11	10
11	14 19	28 52	14 35	29 25	14 51	29	58	15	7 30	32	15 24	31	5 15	40	31 38	15 56	32	11	11
12	14 17	28 52	14 33	29 25	14 49	29	59	15	6 30	32	15 22	31	5 15	38	31 39	15 54	32	12	12
13	14 15	28 52	14 31	29 26	14 48	29	59	15	4 30	32	15 20	31	6 15	36	31 39	15 52	32	12	13
14	14 14	28 53	14 30	29 26	14 46	29	59	15	2 30	33	15 18	31	6 15	34	31 39	15 50	32	13	14
15	14 12	28 53	14 28	29 26	14 44	30	0	15	0 30	33	15 16	31	6 15	32	31 39	15 48	32	13	15
16	14 10	28 53	14 26	29 27	14 42	30	0	14 58	30	33	15 14	31	6 15	30	31 40	15 46	32	13	16
17	14 8	28 54	14 24	29 27	14 40	30	0	14 56	30	33	15 12	31	7 15	28	31 40	15 44	32	13	17
18	14 6	28 54	14 22	29 27	14 38	30	0	14 54	30	34	15 10	31	7 15	26	31 40	15 42	32	14	18
19	14 5	28 54	14 21	29 28	14 36	30	1	14 52	30	34	15 8	31	7 15	24	31 41	15 40	32	14	19
20	14 3	28 55	14 19	29 28	14 35	30	1	14 51	30	34	15 7	31	8 15	22	31 41	15 38	32	14	20
21	14 1	28 55	14 17	29 28	14 33	30	1	14 49	30	35	15 5	31	8 15	20	31 41	15 36	32	15	21
22	13 59	28 55	14 15	29 28	14 31	30	2	14 47	30	35	15 3	31	8 15	19	31 42	15 34	32	15	22
23	13 58	28 55	14 13	29 29	14 29	30	2	14 45	31	35	15 0	31	9 15	17	31 42	15 32	32	16	23
24	13 56	28 56	14 12	29 29	14 27	30	2	14 43	30	36	14 59	31	9 15	15	31 42	15 30	32	16	24
25	13 54	28 56	14 10	29 29	14 25	30	3	14 41	30	36	14 57	31	9 15	13	31 43	15 28	32	16	25
26	13 52	28 56	14 8	29 30	14 24	30	3	14 39	30	36	14 55	31	10 15	11	31 43	15 26	32	16	26
27	13 50	28 57	14 6	29 30	14 22	30	3	14 37	30	36	14 53	31	10 15	9	31 43	15 24	32	17	27
28	13 49	28 57	14 4	29 30	14 20	30	3	14 36	30	37	14 51	31	10 15	7	31 43	15 22	32	17	28
29	13 47	28 57	14 2	29 30	14 18	30	4	14 34	30	37	14 49	31	10 15	5	31 44	15 20	32	17	29
30	13 45	28 57	14 1	29 31	14 16	30	4	14 32	30	37	14 47	31	11 15	3	31 44	15 18	32	17	30
31	13 43	28 58	13 59	29 31	14 14	30	4	14 30	30	38	14 45	31	11 15	1	31 44	15 16	32	18	31
32	13 41	28 58	13 57	29 31	14 13	30	5	14 28	30	38	14 43	31	11 15	0	31 45	15 14	32	18	32
33	13 39	28 58	13 55	29 32	14 11	30	5	14 26	30	38	14 42	31	12 15	0	31 45	15 12	32	19	33
34	13 38	28 59	13 53	29 32	14 9	30	5	14 24	30	39	14 40	31	12 15	0	31 45	15 10	32	19	34
35	13 36	28 59	13 52	29 32	14 7	30	6	14 22	30	39	14 38	31	12 15	0	31 45	15 8	32	19	35
36	13 34	28 59	13 50	29 32	14 5	30	6	14 20	30	39	14 36	31	12 15	0	31 45	15 6	32	19	36
37	13 33	28 59	13 48	29 33	14 3	30	6	14 19	30	39	14 34	31	13 14	0	31 49	15 4	32	20	37
38	13 31	29 0	13 46	29 33	14 1	30	6	14 17	30	40	14 32	31	13 14	0	31 47	15 2	32	20	38
39	13 29	29 0	13 44	29 33	14 0	30	7	14 16	30	40	14 30	31	13 14	0	31 45	15 0	32	20	39
40	13 27	29 0	13 42	29 34	13 58	30	7	14 13	30	40	14 28	31	14 14	0	31 43	14 58	32	20	40
41	13 25	29 0	13 41	29 34	13 56	30	7	14 11	30	41	14 26	31	14 14	0	31 41	14 56	32	21	41
42	13 24	29 0	13 39	29 34	13 54	30	7	14 9	30	41	14 24	31	14 14	0	31 39	14 54	32	21	42
43	13 22	29 0	13 37	29 34	13 52	30	8	14 7	30	41	14 22	31	14 14	0	31 37	14 52	32	21	43
44	13 20	29 0	13 35	29 35	13 50	30	8	14 5	30	41	14 21	31	15 14	0	31 35	14 50	32	22	44
45	13 18	29 0	13 33	29 35	13 48	30	8	14 3	30	42	14 19	31	15 14	0	31 33	14 48	32	22	45
46	13 16	29 0	13 31	29 35	13 46	30	9	14 2	30	42	14 17	31	15 14	0	31 31	14 46	32	22	46
47	13 15	29 0	13 30	29 35	13 45	30	9	14 0	30	42	14 15	31	16 14	0	31 29	14 44	32	22	47
48	13 13	29 0	13 28	29 36	13 43	30	9	13 58	30	43	14 13	31	16 14	0	31 27	14 42	32	23	48
49	13 11	29 0	13 26	29 36	13 41	30	9	13 56	30	43	14 12	31	16 14	0	31 25	14 40	32	23	49
50	13 9	29 0	13 24	29 36	13 39	30	10	13 54	30	43	14 10	31	17 14	0	31 23	14 38	32	23	50
51	13 7	29 0	13 22	29 36	13 37	30	10	13 52	30	43	14 8	31	17 14	0	31 21	14 36	32	24	51
52	13 6	29 0	13 21	29 37	13 35	30	10	13 50	30	44	14 6	31	17 14	0	31 19	14 34	32	24	52
53	13 4	29 0	13 19	29 37	13 33	30	10	13 48	30	44	14 4	31	17 14	0	31 17	14 32	32	24	53
54	13 2	29 0	13 17	29 37	13 32	30	11	13 46	30	44	14 2	31	18 14	0	31 15	14 30	32	25	54
55	13 0	29 0	13 15	29 38	13 30	30	11	13 45	30	45	14 0	31	18 14	0	31 13	14 28	32	25	55
56	12 59	29 0	13 13	29 38	13 28	30	11	13 43	30	45	13 58	31	18 14	0	31 11	14 26	32	25	56
57	12 57	29 0	13 11	29 38	13 26	30	12	13 41	30	45	13 56	31	19 14	0	31 9	14 24	32	25	57
58	12 55	29 0	13 10	29 38	13 24	30	12	13 39	30	45	13 54	31	19 14	0	31 7	14 22	32	25	58
59	12 53	29 0	13 8	29 39	13 22	30	12	13 37	30	46	13 52	31	19 14	0	31 5	14 20	32	26	59
60	12 51	29 0	13 6	29 39	13 21	30	12	13 35	30	46	13 50	31	19 14	0	31 3	14 18	32	26	60

(w.) The Correction of the Moon's Altitude, and the Aux. Angle A. (76° and 77°)

App. Alt.	Minutes of Moon's Hor. Parallax.																Seconds of H. P.
	54'		55'		56'		57'		58'		59'		60'		61'		
76°	Corr. +	A 60"	Corr. +	A 60"	Corr. +	A 60"	Corr. +	A 60"	Corr. +	A 60"	Corr. +	A 60"	Corr. +	A 60"	Corr. +	A 60"	
0'	12 50 29	6 13 4	29 39	13 19 30	13 13 31	30 46	13 48	31 20	14 2 31	53	14 17 32	27	14 31 33	0	2 0 1		
2	12 48 29	6 13 2	29 39	13 17 30	13 11 30	30 46	13 46	31 20	14 0 31	53	14 15 32	27	14 29 33	0	2 1 2		
4	12 46 29	6 13 0	29 40	13 15 30	13 9 30	30 47	13 44	31 20	13 58 31	54	14 13 32	27	14 27 33	1	6 1 3		
6	12 44 29	6 12 59	29 40	13 13 30	13 7 30	30 47	13 42	31 21	13 56 31	54	14 11 32	28	14 25 33	1	6 1 3		
8	12 42 29	7 12 57	29 40	13 11 30	13 5 30	30 47	13 40	31 21	13 54 31	54	14 9 32	28	14 23 33	1	6 1 3		
10	12 41 29	7 12 55	29 40	13 9 30	13 3 30	30 47	13 38	31 21	13 52 31	55	14 7 32	28	14 21 33	2	6 1 3		
12	12 39 29	7 12 53	29 41	13 7 30	13 1 30	30 48	13 36	31 21	13 50 31	55	14 5 32	28	14 19 33	2	6 1 3		
14	12 37 29	7 12 51	29 41	13 5 30	12 59 30	30 48	13 34	31 22	13 48 31	55	14 3 32	29	14 17 33	2	6 1 3		
16	12 35 29	8 12 49	29 41	13 3 30	12 57 30	30 48	13 32	31 22	13 46 31	55	14 1 32	29	14 15 33	2	6 1 3		
18	12 33 29	8 12 48	29 41	13 2 30	12 56 30	30 49	13 30	31 22	13 44 31	56	13 59 32	29	14 13 33	3	6 1 3		
20	12 32 29	8 12 46	29 42	13 0 30	12 54 30	30 49	13 28	31 22	13 42 31	56	13 57 32	29	14 11 33	3	6 1 3		
22	12 30 29	8 12 44	29 42	12 58 30	12 52 30	30 49	13 26	31 23	13 40 31	56	13 55 32	30	14 9 33	3	6 1 3		
24	12 28 29	9 12 42	29 42	12 56 30	12 50 30	30 49	13 24	31 23	13 38 31	56	13 53 32	30	14 7 33	4	6 1 3		
26	12 26 29	9 12 40	29 42	12 54 30	12 48 30	30 50	13 22	31 23	13 36 31	57	13 51 32	30	14 5 33	4	6 1 3		
28	12 24 29	9 12 38	29 43	12 52 30	12 46 30	30 50	13 21	31 23	13 35 31	57	13 49 32	31	14 3 33	4	6 1 3		
30	12 23 29	9 12 37	29 43	12 51 30	12 45 30	30 50	13 19	31 24	13 33 31	57	13 47 32	31	14 1 33	4	6 1 3		
32	12 21 29	10 12 35	29 43	12 49 30	12 43 30	30 50	13 17	31 24	13 31 31	57	13 45 32	31	13 59 33	5	6 1 3		
34	12 19 29	10 12 33	29 43	12 47 30	12 41 30	30 51	13 15	31 24	13 29 31	58	13 43 32	31	13 57 33	5	6 1 3		
36	12 17 29	10 12 31	29 44	12 45 30	12 39 30	30 51	13 13	31 24	13 27 31	58	13 41 32	32	13 55 33	5	6 1 3		
38	12 15 29	10 12 29	29 44	12 43 30	12 37 30	30 51	13 11	31 25	13 25 31	58	13 39 32	32	13 53 33	5	6 1 3		
40	12 14 29	11 12 27	29 44	12 41 30	12 35 30	30 51	13 9	31 25	13 23 31	58	13 37 32	32	13 51 33	6	6 1 3		
42	12 12 29	11 12 26	29 44	12 40 30	12 33 30	30 52	13 7	31 25	13 21 31	59	13 35 32	32	13 49 33	6	6 1 3		
44	12 10 29	11 12 24	29 45	12 38 30	12 31 30	30 52	13 5	31 25	13 19 31	59	13 33 32	33	13 46 33	6	6 1 3		
46	12 8 29	11 12 23	29 45	12 36 30	12 29 30	30 52	13 3	31 26	13 17 31	59	13 31 32	33	13 44 33	7	6 1 3		
48	12 6 29	12 12 20	29 45	12 34 30	12 27 30	30 52	13 1	31 26	13 15 32	0	13 29 32	33	13 42 33	7	6 1 3		
50	12 5 29	12 12 18	29 45	12 32 30	12 25 30	30 53	12 59	31 26	13 13 32	0	13 27 32	34	13 40 33	7	6 1 3		
52	12 3 29	12 12 17	29 46	12 30 30	12 23 30	30 53	12 57	31 27	13 11 32	0	13 25 32	34	13 38 33	7	6 1 3		
54	12 1 29	12 12 15	29 46	12 28 30	12 21 30	30 53	12 55	31 27	13 9 32	0	13 23 32	34	13 36 33	8	6 1 3		
56	11 59 29	12 12 13	29 46	12 26 30	12 19 30	30 53	12 53	31 27	13 7 32	1	13 21 32	34	13 34 33	8	6 1 3		
58	11 57 29	12 12 11	29 46	12 25 30	12 18 30	30 54	12 52	31 27	13 5 32	1	13 19 32	35	13 32 33	8	6 1 3		
77°	54'	55'	56'	57'	58'	59'	60'	61'									
0'	11 56 29	13 12 9	29 47	12 23 30	12 21 30	30 54	12 50	31 28	13 3 32	1	13 17 32	35	13 30 33	8	6 1 3		
2	11 54 29	13 12 7	29 47	12 21 30	12 19 30	30 54	12 48	31 28	13 1 32	1	13 15 32	35	13 28 33	9	6 1 3		
4	11 52 29	13 12 5	29 47	12 19 30	12 17 30	30 54	12 46	31 28	12 59 32	2	13 13 32	35	13 26 33	9	6 1 3		
6	11 50 29	13 12 3	29 47	12 17 30	12 15 30	30 55	12 44	31 28	12 57 32	2	13 11 32	36	13 24 33	9	6 1 3		
8	11 48 29	13 12 1	29 48	12 15 30	12 13 30	30 55	12 42	31 29	12 55 32	2	13 9 32	36	13 22 33	10	6 1 3		
10	11 47 29	14 12 0	29 48	12 13 30	12 11 30	30 55	12 40	31 29	12 53 32	2	13 7 32	36	13 20 33	10	6 1 3		
12	11 45 29	14 11 58	29 48	12 11 30	12 9 30	30 55	12 38	31 29	12 51 32	3	13 5 32	36	13 18 33	10	6 1 3		
14	11 43 29	15 11 56	29 48	12 10 30	12 7 30	30 56	12 36	31 29	12 49 32	3	13 3 32	37	13 16 33	10	6 1 3		
16	11 41 29	15 11 54	29 49	12 8 30	12 5 30	30 56	12 34	31 30	12 47 32	3	13 1 32	37	13 14 33	11	6 1 3		
18	11 39 29	15 11 52	29 49	12 6 30	12 3 30	30 56	12 32	31 30	12 45 32	4	12 59 32	37	13 12 33	11	6 1 3		
20	11 38 29	15 11 51	29 49	12 4 30	12 1 30	30 56	12 30	31 30	12 43 32	4	12 57 32	37	13 10 33	11	6 1 3		
22	11 36 29	16 11 49	29 49	12 2 30	11 59 30	30 57	12 28	31 30	12 41 32	4	12 55 32	38	13 8 33	11	6 1 3		
24	11 34 29	16 11 47	29 50	12 0 30	11 57 30	30 57	12 26	31 31	12 39 32	4	12 53 32	38	13 6 33	12	6 1 3		
26	11 32 29	16 11 45	29 50	11 58 30	11 55 30	30 57	12 24	31 31	12 37 32	5	12 51 32	38	13 4 33	12	6 1 3		
28	11 30 29	16 11 43	29 50	11 56 30	11 53 30	30 57	12 22	31 31	12 35 32	5	12 49 32	39	13 2 33	12	6 1 3		
30	11 29 29	17 11 42	29 50	11 55 30	11 52 30	30 58	12 20	31 31	12 33 32	5	12 46 32	39	12 50 33	13	6 1 3		
32	11 27 29	17 11 40	29 50	11 53 30	11 50 30	30 58	12 19	31 32	12 32 32	5	12 44 32	39	12 48 33	13	6 1 3		
34	11 25 29	17 11 38	29 51	11 51 30	11 48 30	30 58	12 17	31 32	12 30 32	6	12 42 32	39	12 46 33	13	6 1 3		
36	11 23 29	17 11 36	29 51	11 49 30	11 46 30	30 58	12 15	31 32	12 28 32	6	12 40 32	40	12 53 33	13	6 1 3		
38	11 21 29	17 11 34	29 51	11 47 30	11 44 30	30 59	12 13	31 32	12 26 32	6	12 38 32	40	12 51 33	14	6 1 3		
40	11 20 29	18 11 32	29 51	11 45 30	11 42 30	30 59	12 11	31 33	12 24 32	6	12 36 32	40	12 49 33	14	6 1 3		
42	11 18 29	18 11 31	29 52	11 43 30	11 40 30	30 59	12 9	31 33	12 22 32	7	12 34 32	40	12 47 33	14	6 1 3		
44	11 16 29	18 11 29	29 52	11 41 30	11 38 30	30 59	12 7	31 33	12 20 32	7	12 32 32	41	12 45 33	14	6 1 3		
46	11 14 29	18 11 27	29 52	11 40 30	11 36 30	30 59	12 5	31 33	12 18 32	7	12 30 32	41	12 43 33	15	6 1 3		
48	11 12 29	19 11 25	29 52	11 38 30	11 34 30	30 59	12 3	31 34	12 16 32	7	12 28 32	41	12 41 33	15	6 1 3		
50	11 11 29	19 11 23	29 53	11 36 30	11 32 30	30 59	12 1	31 34	12 14 32	8	12 26 32	41	12 39 33	15	6 1 3		
52	11 9 29	19 11 21	29 53	11 34 30	11 30 30	30 59	11 59	31 34	12 12 32	8	12 24 32	42	12 37 33	15	6 1 3		
54	11 7 29	19 11 20	29 53	11 32 30	11 28 30	30 59	11 57	31 34	12 10 32	8	12 22 32	42	12 35 33	16	6 1 3		
56	11 5 29	20 11 18	29 53	11 30 30	11 26 30	30 59	11 55	31 35	12 8 32	8	12 20 32	42	12 33 33	16	6 1 3		
58	11 3 29	20 11 16	29 54	11 28 30	11 24 30	30 59	11 53	31 35	12 6 32	9	12 18 32	42	12 31 33	16	6 1 3		
50	11 3 29	20 11 16	29 54	11 28 30	11 24 30	30 59	11 53	31 35	12 6 32	9	12 18 32	42	12 31 33	16	6 1 3		

(78° and 79°) The Correction of the Moon's Altitude, and the Aux. Angle A																			(w.)	
App. Alt.	Minutes of Moon's Hor. Parallax.																Seconds of H. P.			
	54'		55'		56'		57'		58'		59'		60'		61'		A	C		
78°	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	1	2		
	+	60°	+	60°	+	60°	+	60°	+	60°	+	60°	+	60°	+	60°				
0'	11	120	20	11	14	29	54	11	26	30	28	11	39	31	1	11	51	31	35	
2	11	029	20	11	12	29	54	11	25	30	28	11	37	31	2	11	49	31	35	
4	10	58	29	20	11	10	29	54	11	23	30	28	11	35	31	2	11	48	31	36
6	10	56	29	21	11	8	29	54	11	21	30	28	11	33	31	2	11	46	31	36
8	10	54	29	21	11	7	29	55	11	19	30	28	11	31	31	2	11	44	31	36
10	10	52	29	21	11	6	29	55	11	17	30	29	11	29	31	2	11	42	31	36
12	10	51	29	21	11	5	29	55	11	15	30	29	11	27	31	3	11	40	31	36
14	10	49	29	22	11	4	29	55	11	13	30	29	11	26	31	3	11	38	31	37
16	10	47	29	22	10	59	29	56	11	11	30	29	11	24	31	3	11	36	31	37
18	10	45	29	22	10	57	29	56	11	10	30	30	11	22	31	3	11	34	31	37
20	10	43	29	22	10	55	29	56	11	8	30	30	11	20	31	4	11	32	31	37
22	10	42	29	22	10	54	29	56	11	6	30	30	11	18	31	4	11	30	31	38
24	10	40	29	23	10	52	29	56	11	4	30	30	11	16	31	4	11	28	31	38
26	10	38	29	23	10	50	29	57	11	2	30	30	11	14	31	4	11	26	31	38
28	10	36	29	23	10	48	29	57	11	0	30	31	11	12	31	5	11	24	31	38
30	10	34	29	23	10	46	29	57	10	58	30	31	11	10	31	5	11	22	31	39
32	10	33	29	24	10	44	29	57	10	56	30	31	11	8	31	5	11	20	31	39
34	10	31	29	24	10	43	29	58	10	55	30	31	11	6	31	5	11	18	31	39
36	10	29	29	24	10	41	29	58	10	53	30	32	11	5	31	5	11	16	31	39
38	10	27	29	24	10	39	29	58	10	51	30	32	11	3	31	6	11	14	31	40
40	10	25	29	24	10	37	29	58	10	49	30	32	11	1	31	6	11	12	31	40
42	10	23	29	25	10	35	29	58	10	47	30	32	10	59	31	6	11	11	31	40
44	10	22	29	25	10	33	29	59	10	45	30	33	10	57	31	6	11	9	31	40
46	10	20	29	25	10	32	29	59	10	43	30	33	10	55	31	7	11	7	31	40
48	10	18	29	25	10	30	29	59	10	41	30	33	10	53	31	7	11	5	31	41
50	10	16	29	25	10	28	29	59	10	39	30	33	10	51	31	7	11	3	31	41
52	10	14	29	26	10	26	30	0	10	38	30	33	10	49	31	7	11	1	31	41
54	10	13	29	26	10	24	30	0	10	36	30	34	10	47	31	8	10	59	31	41
56	10	11	29	26	10	22	30	0	10	34	30	34	10	45	31	8	10	57	31	42
58	10	9	29	26	10	21	30	0	10	32	30	34	10	44	31	8	10	55	31	42
79°	54'		55'		56'		57'		58'		59'		60'		61'					
0'	10	7	29	27	10	19	30	0	10	30	30	34	10	42	31	8	10	53	31	42
2	10	5	29	27	10	17	30	1	10	28	30	35	10	40	31	8	10	51	31	42
4	10	4	29	27	10	16	30	1	10	26	30	35	10	38	31	9	10	49	31	42
6	10	2	29	27	10	13	30	1	10	24	30	35	10	36	31	9	10	47	31	43
8	10	0	29	27	10	11	30	1	10	23	30	35	10	34	31	9	10	45	31	43
10	9	59	29	28	10	9	30	1	10	21	30	35	10	32	31	9	10	43	31	43
12	9	58	29	28	10	8	30	2	10	19	30	36	10	30	31	9	10	41	31	43
14	9	54	29	28	10	6	30	2	10	17	30	36	10	28	31	10	10	39	31	43
16	9	53	29	28	10	4	30	2	10	15	30	36	10	26	31	10	10	37	31	44
18	9	51	29	28	10	2	30	2	10	13	30	36	10	24	31	10	10	35	31	44
20	9	49	29	28	10	0	30	2	10	11	30	36	10	22	31	10	10	33	31	44
22	9	47	29	28	9	58	30	3	10	9	30	36	10	20	31	10	10	31	31	44
24	9	45	29	28	9	56	30	3	10	7	30	37	10	18	31	11	10	29	31	45
26	9	44	29	29	9	55	30	3	10	6	30	37	10	17	31	11	10	28	31	45
28	9	42	29	29	9	53	30	3	10	4	30	37	10	15	31	11	10	26	31	45
30	9	40	29	29	9	51	30	3	10	2	30	37	10	13	31	11	10	24	31	45
32	9	38	29	30	9	49	30	4	10	0	30	37	10	11	31	11	10	22	31	45
34	9	36	29	30	9	47	30	4	9	58	30	38	10	9	31	12	10	20	31	46
36	9	34	29	30	9	45	30	4	9	56	30	38	10	7	31	12	10	18	31	46
38	9	33	29	30	9	43	30	4	9	54	30	38	10	5	31	12	10	16	31	46
40	9	31	29	30	9	42	30	4	9	52	30	38	10	3	31	12	10	14	31	46
42	9	29	29	31	9	40	30	5	9	50	30	38	10	1	31	12	10	12	31	46
44	9	27	29	31	9	38	30	5	9	49	30	39	9	59	31	13	10	10	31	47
46	9	25	29	31	9	36	30	5	9	47	30	39	9	57	31	13	10	8	31	47
48	9	24	29	31	9	34	30	5	9	45	30	39	9	56	31	13	10	6	31	47
50	9	22	29	31	9	32	30	5	9	43	30	39	9	53	31	13	10	4	31	47
52	9	20	29	32	9	30	30	5	9	41	30	39	9	52	31	13	10	2	31	47
54	9	18	29	32	9	29	30	6	9	39	30	40	9	50	31	14	10	0	31	48
56	9	16	29	32	9	27	30	6	9	37	30	40	9	48	31	14	10	0	31	48
58	9	14	29	32	9	25	30	6	9	35	30	40	9	46	31	14	10	0	31	48

(w.) The Correction of the Moon's Altitude, and the Aux. Angle A. (80° and 81°)																			Seconds of P	
Minutes of Moon's Hor. Parallax.																			Alt.	
App. Alt.	54'		55'		56'		57'		58'		59'		60'		61'					
80°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°		
0'	0 13 29 32	0 23 30 0	0 33 30 40	0 44 31 14	0 54 31 48	10 5 32 22	10 15 32 56	10 25 33 30	10 35 34 04	10 45 34 38	10 55 35 12	11 5 35 46	11 15 36 20	11 25 36 54	11 35 37 28	11 45 38 02	11 55 38 76	12 5 39 50	0	
2	0 11 29 33	0 21 30 7	0 31 30 40	0 42 31 14	0 52 31 48	10 3 32 22	10 13 32 56	10 23 33 30	10 33 34 04	10 43 34 38	10 53 35 12	11 3 35 46	11 13 36 20	11 23 36 54	11 33 37 28	11 43 38 02	11 53 38 76	12 3 39 50	2	
4	0 9 29 33	0 19 30 7	0 30 30 41	0 40 31 15	0 50 31 49	10 1 32 23	10 11 32 57	10 21 33 31	10 31 34 05	10 41 34 39	10 51 35 13	11 1 35 47	11 11 36 21	11 21 36 55	11 31 37 29	11 41 38 03	11 51 38 77	12 1 39 51	4	
6	0 7 29 33	0 17 30 7	0 28 30 41	0 38 31 15	0 48 31 49	0 59 32 23	10 9 32 57	10 19 33 31	10 29 34 05	10 39 34 39	10 49 35 13	11 9 35 47	11 9 36 21	11 19 36 55	11 29 37 29	11 39 38 03	11 49 38 77	12 9 39 51	6	
8	0 5 29 33	0 15 30 7	0 26 30 41	0 36 31 15	0 46 31 49	0 57 32 23	10 7 32 57	10 17 33 31	10 27 34 05	10 37 34 39	10 47 35 13	11 7 35 47	11 7 36 21	11 17 36 55	11 27 37 29	11 37 38 03	11 47 38 77	12 7 39 51	8	
10	0 3 29 33	0 13 30 7	0 24 30 41	0 34 31 15	0 44 31 49	0 54 32 23	10 5 32 57	10 15 33 31	10 25 34 05	10 35 34 39	10 45 35 13	11 5 35 47	11 5 36 21	11 15 36 55	11 25 37 29	11 35 38 03	11 45 38 77	12 5 39 51	10	
12	0 2 29 33	0 12 30 7	0 22 30 41	0 32 31 15	0 42 31 49	0 52 32 23	10 3 32 57	10 13 33 31	10 23 34 05	10 33 34 39	10 43 35 13	11 3 35 47	11 3 36 21	11 13 36 55	11 23 37 29	11 33 38 03	11 43 38 77	12 3 39 51	12	
14	0 0 29 34	0 10 30 8	0 20 30 42	0 30 31 16	0 40 31 50	0 50 32 24	10 1 32 58	10 11 33 32	10 21 34 06	10 31 34 40	10 41 35 14	11 1 35 48	11 1 36 22	11 11 36 56	11 21 37 30	11 31 38 04	11 41 38 78	12 1 39 52	14	
16	0 58 29 34	0 8 30 8	0 18 30 42	0 28 31 16	0 38 31 50	0 48 32 24	0 58 32 58	10 9 33 32	10 19 34 06	10 29 34 40	10 39 35 14	11 9 35 48	11 9 36 22	11 19 36 56	11 29 37 30	11 39 38 04	11 49 38 78	12 9 39 52	16	
18	0 56 29 34	0 6 30 8	0 16 30 42	0 26 31 16	0 36 31 50	0 46 32 24	0 56 32 58	10 7 33 32	10 17 34 06	10 27 34 40	10 37 35 14	11 7 35 48	11 7 36 22	11 17 36 56	11 27 37 30	11 37 38 04	11 47 38 78	12 7 39 52	18	
20	0 54 29 34	0 4 30 8	0 14 30 42	0 24 31 16	0 34 31 50	0 44 32 24	0 54 32 58	10 5 33 32	10 15 34 06	10 25 34 40	10 35 35 14	11 5 35 48	11 5 36 22	11 15 36 56	11 25 37 30	11 35 38 04	11 45 38 78	12 5 39 52	20	
22	0 52 29 34	0 2 30 8	0 13 30 42	0 22 31 16	0 32 31 50	0 42 32 24	0 52 32 58	10 3 33 32	10 13 34 06	10 23 34 40	10 33 35 14	11 3 35 48	11 3 36 22	11 13 36 56	11 23 37 30	11 33 38 04	11 43 38 78	12 3 39 52	22	
24	0 51 29 34	0 1 30 8	0 11 30 42	0 21 31 16	0 31 31 50	0 41 32 24	0 51 32 58	10 1 33 32	10 11 34 06	10 21 34 40	10 31 35 14	11 1 35 48	11 1 36 22	11 11 36 56	11 21 37 30	11 31 38 04	11 41 38 78	12 1 39 52	24	
26	0 49 29 35	0 59 30 9	0 9 30 43	0 19 31 17	0 29 31 51	0 39 32 25	0 49 32 59	0 59 33 33	10 9 33 33	10 19 34 07	10 29 34 41	10 39 35 15	11 9 35 49	11 19 36 57	11 29 37 31	11 39 38 05	11 49 38 79	12 9 39 53	26	
28	0 47 29 35	0 57 30 9	0 7 30 43	0 17 31 17	0 27 31 51	0 37 32 25	0 47 32 59	0 57 33 33	10 7 33 33	10 17 34 07	10 27 34 41	10 37 35 15	11 7 35 49	11 17 36 57	11 27 37 31	11 37 38 05	11 47 38 79	12 7 39 53	28	
30	0 45 29 35	0 55 30 9	0 5 30 43	0 15 31 17	0 25 31 51	0 35 32 25	0 45 32 59	0 55 33 33	10 5 33 33	10 15 34 07	10 25 34 41	10 35 35 15	11 5 35 49	11 15 36 57	11 25 37 31	11 35 38 05	11 45 38 79	12 5 39 53	30	
32	0 43 29 35	0 53 30 9	0 3 30 43	0 13 31 17	0 23 31 51	0 33 32 25	0 43 32 59	0 53 33 33	10 3 33 33	10 13 34 07	10 23 34 41	10 33 35 15	11 3 35 49	11 13 36 57	11 23 37 31	11 33 38 05	11 43 38 79	12 3 39 53	32	
34	0 42 29 35	0 51 30 9	0 1 30 43	0 11 31 17	0 21 31 51	0 31 32 25	0 41 32 59	0 51 33 33	10 1 33 33	10 11 34 07	10 21 34 41	10 31 35 15	11 1 35 49	11 11 36 57	11 21 37 31	11 31 38 05	11 41 38 79	12 1 39 53	34	
36	0 40 29 35	0 49 30 9	0 59 30 44	0 9 31 18	0 19 31 52	0 29 32 26	0 39 32 59	0 49 33 33	9 59 33 33	10 9 34 07	10 19 34 41	10 29 35 15	11 9 35 49	11 19 36 57	11 29 37 31	11 39 38 05	11 49 38 79	12 9 39 53	36	
38	0 38 29 36	0 47 30 10	0 57 30 44	0 7 31 18	0 17 31 52	0 27 32 26	0 37 32 59	0 47 33 33	9 57 33 33	10 7 34 07	10 17 34 41	10 27 35 15	11 7 35 49	11 17 36 57	11 27 37 31	11 37 38 05	11 47 38 79	12 7 39 53	38	
40	0 36 29 36	0 45 30 10	0 55 30 44	0 5 31 18	0 15 31 52	0 25 32 26	0 35 32 59	0 45 33 33	9 55 33 33	10 5 34 07	10 15 34 41	10 25 35 15	11 5 35 49	11 15 36 57	11 25 37 31	11 35 38 05	11 45 38 79	12 5 39 53	40	
42	0 34 29 36	0 43 30 10	0 53 30 44	0 3 31 18	0 13 31 52	0 23 32 26	0 33 32 59	0 43 33 33	9 53 33 33	10 3 34 07	10 13 34 41	10 23 35 15	11 3 35 49	11 13 36 57	11 23 37 31	11 33 38 05	11 43 38 79	12 3 39 53	42	
44	0 32 29 36	0 41 30 10	0 51 30 44	0 1 31 18	0 11 31 52	0 21 32 26	0 31 32 59	0 41 33 33	9 51 33 33	10 1 34 07	10 11 34 41	10 21 35 15	11 1 35 49	11 11 36 57	11 21 37 31	11 31 38 05	11 41 38 79	12 1 39 53	44	
46	0 31 29 36	0 40 30 10	0 50 30 44	0 0 31 18	0 10 31 52	0 19 32 26	0 29 32 59	0 39 33 33	9 50 33 33	10 0 34 07	10 10 34 41	10 20 35 15	11 0 35 49	11 10 36 57	11 20 37 31	11 30 38 05	11 40 38 79	12 0 39 53	46	
48	0 29 29 36	0 38 30 11	0 48 30 45	0 58 31 19	0 7 31 53	0 17 32 27	0 27 32 59	0 37 33 33	9 48 33 33	9 58 34 07	10 8 34 41	10 18 35 15	11 8 35 49	11 18 36 57	11 28 37 31	11 38 38 05	11 48 38 79	11 58 39 53	48	
50	0 27 29 37	0 36 30 11	0 46 30 45	0 56 31 19	0 5 31 53	0 15 32 27	0 25 32 59	0 35 33 33	9 46 33 33	9 56 34 07	10 6 34 41	10 16 35 15	11 6 35 49	11 16 36 57	11 26 37 31	11 36 38 05	11 46 38 79	11 56 39 53	50	
52	0 25 29 37	0 34 30 11	0 44 30 45	0 54 31 19	0 3 31 53	0 13 32 27	0 23 32 59	0 33 33 33	9 44 33 33	9 54 34 07	10 4 34 41	10 14 35 15	11 4 35 49	11 14 36 57	11 24 37 31	11 34 38 05	11 44 38 79	11 54 39 53	52	
54	0 23 29 37	0 33 30 11	0 42 30 45	0 52 31 19	0 1 31 53	0 11 32 27	0 21 32 59	0 31 33 33	9 42 33 33	9 52 34 07	10 2 34 41	10 12 35 15	11 2 35 49	11 12 36 57	11 22 37 31	11 32 38 05	11 42 38 79	11 52 39 53	54	
56	0 21 29 37	0 31 30 11	0 40 30 45	0 50 31 19	0 59 31 53	0 9 32 27	0 19 32 59	0 29 33 33	9 40 33 33	9 50 34 07	10 0 34 41	10 10 35 15	11 0 35 49	11 10 36 57	11 20 37 31	11 30 38 05	11 40 38 79	11 50 39 53	56	
58	0 20 29 37	0 29 30 11	0 38 30 45	0 48 31 20	0 57 31 54	0 7 32 28	0 17 32 59	0 27 33 33	9 38 33 33	9 48 34 07	10 8 34 41	10 18 35 15	11 8 35 49	11 18 36 57	11 28 37 31	11 38 38 05	11 48 38 79	11 58 39 53	58	
81°	54'	55'	56'	57'	58'	59'	60'	61'											Alt.	
0'	0 18 29 37	0 27 30 12	0 37 30 46	0 46 31 20	0 55 31 54	0 5 32 28	0 14 33 2	0 24 33 36	0 34 33 50	0 44 34 4	0 54 34 18	0 64 34 32	0 74 34 46	0 84 35 0	0 94 35 14	1 4 35 28	1 14 35 42	1 24 35 56	0	
2	0 16 29 38	0 25 30 12	0 35 30 46	0 44 31 20	0 53 31 54	0 3 32 28	0 12 33 2	0 22 33 36	0 32 33 50	0 42 34 4	0 52 34 18	0 62 34 32	0 72 34 46	0 82 35 0	0 92 35 14	1 2 35 28	1 12 35 42	1 22 35 56	2	
4	0 14 29 38	0 23 30 12	0 33 30 46	0 42 31 20	0 51 31 54	0 1 32 28	0 10 33 2	0 20 33 36	0 30 33 50	0 40 34 4	0 50 34 18	0 60 34 32	0 70 34 46	0 80 35 0	0 90 35 14	1 0 35 28	1 10 35 42	1 20 35 56	4	
6	0 12 29 38	0 22 30 12	0 31 30 46	0 40 31 20	0 49 31 54	0 59 32 28	0 8 33 2	0 17 33 36	0 27 33 50	0 37 34 4	0 47 34 18	0 57 34 32	0 67 34 46	0 77 35 0	0 87 35 14	0 97 35 28	1 7 35 42	1 17 35 56	6	
8	0 10 29 38	0 20 30 12	0 29 30 46	0 38 31 20	0 47 31 54	0 57 32 28	0 6 33 2	0 15 33 36	0 25 33 50	0 35 34 4	0 45 34 18	0 55 34 32	0 65 34 46	0 75 35 0	0 85 35 14	0 95 35 28	1 5 35 42	1 15 35 56	8	
10	0 8 29 38	0 17 30 12	0 27 30 46	0 36 31 20	0 45 31 55	0 55 32 29	0 4 33 2	0 13 33 36	0 23 33 50	0 33 34 4	0 43 34 18	0 53 34 32	0 63 34 46	0 73 35 0	0 83 35 14	0 93 35 28	1 3 35 42	1 13 35 56	10	
12	0 7 29 38	0 16 30 12	0 25 30 47	0 34 31 21	0															

(82° and 88°) The Correction of the Moon's Altitude, and the Aux. Angle A. (w.)

App. Alt.	Minutes of Moon's Hor. Parallax.												Seconds of H. P.				
	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70
Corr. +	A 60"	Corr. +	A 60"	Corr. +	A 60"	Corr. +	A 60"	Corr. +	A 60"	Corr. +	A 60"	Corr. +	A 60"	Corr. +	A 60"	Corr. +	A 60"
0	7 22 29 42	7 31 30 16	7 39 30 50	7 48 31 25	7 56 31 59	8 5 32 33	8 13 33 7	8 21 33 41	8 29 33 55	8 37 34 9	8 45 34 23	8 53 34 37	9 01 34 51	9 09 35 5	9 17 35 19	9 25 35 33	9 33 35 47
2	7 21 29 42	7 29 30 16	7 38 30 51	7 46 31 26	7 54 31 59	8 3 32 33	8 11 33 7	8 19 33 41	8 27 33 55	8 35 34 9	8 43 34 23	8 51 34 37	8 59 34 51	9 07 35 5	9 15 35 19	9 23 35 33	9 31 35 47
4	7 19 29 43	7 27 30 17	7 36 30 51	7 44 31 26	7 52 31 59	8 1 32 33	8 9 33 7	8 17 33 42	8 25 33 56	8 33 34 10	8 41 34 24	8 49 34 38	8 57 34 52	9 05 35 6	9 13 35 20	9 21 35 34	9 29 35 48
6	7 17 29 43	7 26 30 17	7 34 30 51	7 42 31 26	7 50 31 59	7 59 32 33	8 7 33 7	8 15 33 42	8 23 33 56	8 31 34 10	8 39 34 24	8 47 34 38	8 55 34 52	9 03 35 6	9 11 35 20	9 19 35 34	9 27 35 48
8	7 15 29 43	7 24 30 17	7 32 30 51	7 40 31 26	7 48 31 59	7 57 32 33	8 5 33 8	8 13 33 42	8 21 33 56	8 29 34 10	8 37 34 24	8 45 34 38	8 53 34 52	9 01 35 6	9 09 35 20	9 17 35 34	9 25 35 48
10	7 14 29 43	7 22 30 17	7 30 30 51	7 38 31 26	7 46 31 59	7 55 32 34	8 3 33 8	8 11 33 42	8 19 33 56	8 27 34 10	8 35 34 24	8 43 34 38	8 51 34 52	8 59 35 6	9 07 35 20	9 15 35 34	9 23 35 48
12	7 12 29 43	7 20 30 17	7 28 30 51	7 36 31 25	7 44 32 0	7 53 32 34	8 1 33 8	8 9 33 42	8 17 33 56	8 25 34 10	8 33 34 24	8 41 34 38	8 49 34 52	8 57 35 6	9 05 35 20	9 13 35 34	9 21 35 48
14	7 10 29 43	7 18 30 17	7 26 30 51	7 34 31 26	7 42 32 0	7 50 32 34	7 58 33 8	8 6 33 42	8 14 33 56	8 22 34 10	8 30 34 24	8 38 34 38	8 46 34 52	8 54 35 6	9 02 35 20	9 10 35 34	9 18 35 48
16	7 8 29 43	7 16 30 17	7 24 30 52	7 32 31 26	7 40 32 0	7 49 32 34	7 57 33 8	8 5 33 42	8 13 33 56	8 21 34 10	8 29 34 24	8 37 34 38	8 45 34 52	8 53 35 6	9 01 35 20	9 09 35 34	9 17 35 48
18	7 6 29 43	7 14 30 18	7 22 30 52	7 30 31 26	7 38 32 0	7 47 32 34	7 55 33 8	8 3 33 43	8 11 33 57	8 19 34 11	8 27 34 25	8 35 34 39	8 43 34 53	8 51 35 7	8 59 35 21	9 07 35 35	9 15 35 49
20	7 4 29 43	7 12 30 18	7 20 30 52	7 28 31 26	7 36 32 0	7 44 32 34	7 52 33 8	8 0 33 43	8 8 33 57	8 16 34 11	8 24 34 25	8 32 34 39	8 40 34 53	8 48 35 7	8 56 35 21	9 04 35 35	9 12 35 49
22	7 3 29 44	7 11 30 18	7 18 30 52	7 26 31 26	7 33 32 0	7 42 32 36	7 50 33 9	7 58 33 43	8 6 33 57	8 14 34 11	8 22 34 25	8 30 34 39	8 38 34 53	8 46 35 7	8 54 35 21	9 02 35 35	9 10 35 49
24	7 1 29 44	7 9 30 18	7 17 30 52	7 25 31 26	7 33 32 0	7 40 32 36	7 48 33 9	7 56 33 43	8 4 33 57	8 12 34 11	8 20 34 25	8 28 34 39	8 36 34 53	8 44 35 7	8 52 35 21	8 60 35 35	8 68 35 49
26	6 59 29 44	7 7 30 18	7 15 30 52	7 23 31 27	7 31 32 1	7 38 32 36	7 46 33 9	7 54 33 43	8 2 33 57	8 10 34 11	8 18 34 25	8 26 34 39	8 34 34 53	8 42 35 7	8 50 35 21	8 58 35 35	8 66 35 49
28	6 57 29 44	7 5 30 18	7 13 30 53	7 21 31 27	7 29 32 1	7 36 32 36	7 44 33 9	7 52 33 43	8 0 33 57	8 8 34 11	8 16 34 25	8 24 34 39	8 32 34 53	8 40 35 7	8 48 35 21	8 56 35 35	8 64 35 49
30	6 55 29 44	7 3 30 18	7 11 30 53	7 19 31 27	7 27 32 1	7 34 32 36	7 42 33 9	7 50 33 44	7 58 33 58	8 6 34 11	8 14 34 25	8 22 34 39	8 30 34 53	8 38 35 7	8 46 35 21	8 54 35 35	8 62 35 49
32	6 53 29 44	7 1 30 18	7 9 30 53	7 17 31 27	7 25 32 1	7 32 32 36	7 40 33 10	7 48 33 44	7 56 33 58	8 4 34 11	8 12 34 25	8 20 34 39	8 28 34 53	8 36 35 7	8 44 35 21	8 52 35 35	8 60 35 49
34	6 52 29 44	6 59 30 19	7 7 30 53	7 15 31 27	7 23 32 1	7 30 32 36	7 38 33 10	7 46 33 44	7 54 33 58	8 2 34 11	8 10 34 25	8 18 34 39	8 26 34 53	8 34 35 7	8 42 35 21	8 50 35 35	8 58 35 49
36	6 50 29 45	6 58 30 19	7 5 30 53	7 13 31 27	7 21 32 1	7 28 32 36	7 36 33 10	7 44 33 44	7 52 33 58	8 0 34 11	8 8 34 25	8 16 34 39	8 24 34 53	8 32 35 7	8 40 35 21	8 48 35 35	8 56 35 49
38	6 48 29 45	6 56 30 19	7 3 30 53	7 11 31 27	7 19 32 2	7 26 32 36	7 34 33 10	7 42 33 44	7 50 33 58	7 58 34 11	8 6 34 25	8 14 34 39	8 22 34 53	8 30 35 7	8 38 35 21	8 46 35 35	8 54 35 49
40	6 46 29 45	6 54 30 19	7 1 30 53	7 9 31 27	7 17 32 2	7 24 32 36	7 32 33 10	7 40 33 44	7 48 33 58	7 56 34 11	8 4 34 25	8 12 34 39	8 20 34 53	8 28 35 7	8 36 35 21	8 44 35 35	8 52 35 49
42	6 44 29 45	6 52 30 19	6 59 30 53	7 7 31 28	7 15 32 2	7 22 32 36	7 30 33 10	7 38 33 45	7 46 33 59	7 54 34 11	8 2 34 25	8 10 34 39	8 18 34 53	8 26 35 7	8 34 35 21	8 42 35 35	8 50 35 49
44	6 42 29 45	6 50 30 19	6 58 30 54	7 5 31 28	7 13 32 2	7 20 32 36	7 28 33 11	7 36 33 45	7 44 33 59	7 52 34 11	8 0 34 25	8 8 34 39	8 16 34 53	8 24 35 7	8 32 35 21	8 40 35 35	8 48 35 49
46	6 41 29 45	6 48 30 19	6 56 30 54	7 3 31 28	7 11 32 2	7 18 32 36	7 26 33 11	7 34 33 45	7 42 33 59	7 50 34 11	7 58 34 25	8 6 34 39	8 14 34 53	8 22 35 7	8 30 35 21	8 38 35 35	8 46 35 49
48	6 39 29 45	6 46 30 20	6 54 30 54	7 1 31 28	7 9 32 2	7 16 32 37	7 24 33 11	7 32 33 45	7 40 33 59	7 48 34 11	7 56 34 25	8 4 34 39	8 12 34 53	8 20 35 7	8 28 35 21	8 36 35 35	8 44 35 49
50	6 37 29 45	6 44 30 20	6 52 30 54	6 59 31 28	7 7 32 2	7 14 32 37	7 22 33 11	7 29 33 45	7 37 33 59	7 45 34 11	7 53 34 25	8 1 34 39	8 9 34 53	8 17 35 7	8 25 35 21	8 33 35 35	8 41 35 49
52	6 35 29 46	6 43 30 20	6 50 30 54	6 57 31 28	7 5 32 2	7 12 32 37	7 20 33 11	7 27 33 45	7 35 33 59	7 43 34 11	7 51 34 25	7 59 34 39	8 7 34 53	8 15 35 7	8 23 35 21	8 31 35 35	8 39 35 49
54	6 33 29 46	6 41 30 20	6 48 30 54	6 55 31 29	7 3 32 3	7 10 32 37	7 18 33 11	7 25 33 46	7 33 33 60	7 41 34 12	7 49 34 26	7 57 34 40	8 5 34 54	8 13 35 8	8 21 35 22	8 29 35 36	8 37 35 50
56	6 31 29 46	6 39 30 20	6 46 30 54	6 54 31 29	7 1 32 3	7 8 32 37	7 16 33 11	7 23 33 46	7 31 33 60	7 39 34 12	7 47 34 26	7 55 34 40	8 3 34 54	8 11 35 8	8 19 35 22	8 27 35 36	8 35 35 50
58	6 29 29 46	6 37 30 20	6 44 30 55	6 52 31 29	6 59 32 3	7 6 32 37	7 14 33 12	7 21 33 46	7 29 33 60	7 37 34 12	7 45 34 26	7 53 34 40	8 1 34 54	8 9 35 8	8 17 35 22	8 25 35 36	8 33 35 50
60	6 27 29 46	6 35 30 20	6 42 30 55	6 50 31 29	6 57 32 3	7 4 32 38	7 12 33 12	7 19 33 46	7 27 33 60	7 35 34 12	7 43 34 26	7 51 34 40	7 59 34 54	8 7 35 8	8 15 35 22	8 23 35 36	8 31 35 50
62	6 25 29 46	6 33 30 21	6 40 30 55	6 48 31 29	6 56 32 3	7 2 32 38	7 10 33 12	7 17 33 46	7 25 33 60	7 33 34 12	7 41 34 26	7 49 34 40	7 57 34 54	8 5 35 8	8 13 35 22	8 21 35 36	8 29 35 50
64	6 23 29 46	6 31 30 21	6 38 30 55	6 46 31 29	6 54 32 3	7 0 32 38	7 8 33 12	7 15 33 46	7 23 33 60	7 31 34 12	7 39 34 26	7 47 34 40	7 55 34 54	8 3 35 8	8 11 35 22	8 19 35 36	8 27 35 50
66	6 21 29 47	6 29 30 21	6 37 30 55	6 44 31 29	6 51 32 3	6 58 32 38	7 6 33 12	7 13 33 47	7 21 33 61	7 29 34 13	7 37 34 27	7 45 34 41	7 53 34 55	8 1 35 8	8 9 35 22	8 17 35 36	8 25 35 50
68	6 19 29 47	6 27 30 21	6 35 30 55	6 42 31 30	6 49 32 3	6 56 32 38	7 4 33 12	7 11 33 47	7 19 33 61	7 27 34 13	7 35 34 27	7 43 34 41	7 51 34 55	7 59 35 8	8 7 35 22	8 15 35 36	8 23 35 50
70	6 17 29 47	6 24 30 21	6 33 30 56	6 39 31 30	6 46 32 3	6 53 32 38	6 51 33 12	7 8 33 47	7 16 33 61	7 24 34 13	7 32 34 27	7 40 34 41	7 48 34 55	8 6 35 8	8 14 35 22	8 22 35 36	8 30 35 50
72	6 15 29 47	6 22 30 21	6 29 30 56	6 36 31 30	6 43 32 3	6 50 32 39	6 48 33 12	7 5 33 47	7 13 33 61	7 21 34 13	7 29 34 27	7 37 34 41	7 45 34 55	8 4 35 8	8 12 35 22	8 20 35 36	8 28 35 50
74	6 13 29 47	6 20 30 22	6 27 30 56	6 34 31 30	6 41 32 3	6 48 32 39	6 46 33 12	7 3 33 47	7 11 33 61	7 19 34 13	7 27 34 27	7 35 34 41	7 43 34 55	8 2 35 8	8 10 35 22	8 18 35 36	8 26 35 50
76	6 11 29 47	6 18 30 22	6 25 30 56	6 32 31 30	6 39 32 3	6 46 32 39	6 44 33 12	7 1 33 47	7 9 33 61	7 17 34 13	7 25 34 27	7 33 34 41	7 41 34 55	8 0 35 8	8 8 35 22	8 16 35 36	8 24 35 50
78	6 9 29 47	6 16 30 22	6 23 30 56	6 30 31 30	6 37 32 3	6 44 32 39	6 42 33 12	6 59 33 47	7 7 33 61	7 15 34 13	7 23 34 27	7 31 34 41	7 39 34 55	7 58 35 8	8 6 35 22	8 14 35 36	8 22 35 50
80	6 7 29 48	6 14 30 22	6 21 30 56	6 28 31 31	6 35 32 3	6 42 32 39	6 40 33 12	6 57 33 47	7 5 33 61	7 13 34 13	7 21 34 27	7 29 34 41	7 37 34 55	7 56 35 8	8 4 35 22	8 12 35 36	8 20 35 50
82	6 5 29 48	6 12 30 22	6 19 30 56	6 26 31 31	6 33 32 3	6 40 32 39	6 38 33 12	6 55 33 47	7 3 33 61	7 11 34 13	7 19 34 27	7 27 34 41	7 35 34 55	7 54 35 8	8 2 35 22	8 10 35 36	8 18 35 50
84	6 3 29 48	6 10 30 22	6 17 30 56	6 24 31 31	6 31 32 3	6 38 32 39	6 36 33 12	6 53 33 47	7 1 33 61	6 19 34 13	6 27 34 27	6 35 34 41	6 43 34 55	7 52 35 8	8 0 35 22	8 8 35 36	8 16 35 50
86	6 1 29 48	6 8 30 22	6 15 30 56	6 22 31 31	6 29 32 3	6 36 32 39	6 34 33 12	6 51 33 47	6 59 33 61	6 17 34 13	6 25 34 27	6 33 34 41	6 41 34 55	7 50 35 8	7 58 35 22	8 6 35 36	8 14 35 50
88	6 0 29 48	6 7 30 22	6 14 30 57	6 20 31 31	6 27 32 3	6 34 32 40	6 32 33 12	6 49 33 47	6 57 33 61	6 15 34 13	6 23 34 27	6 31 34 41	6 39 34 55	7 48 35 8	7 56 35 22	8 4 35 36	8 12 35 50
90	6 58 29 48	6 5 30 23	6 12 30 57	6 19 31 31	6 26 32 3	6 32 32 40	6 30 33 12	6 47 33 47	6 55 33 61	6 13 34 13	6 21 34 27	6 29 34 41	6 37 34 55	7 46 35 8	7 54 35 22	8 2 35 36	8 10 35 50
92	6 56 29																

(w.)		The Correction of the Moon's Altitude, and the Aux. Angle A. (88° and 89°)														Records of H. F.	
App. Alt.	88°	Minutes of Moon's Hor. Parallax.														"	Cor.
		54'	55'	56'	57'	58'	59'	60'	61'	Corr.	A	Corr.	A	Corr.	A		
		Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°		
0'		1 51 29 59	1 53 30 34	1 55 31 8	1 57 31 43	1 59 32 17	2 2 32 52	2 4 33 26	2 6 34 1							1	0 1
2		1 49 29 59	1 51 30 34	1 53 31 8	1 55 31 43	1 58 32 17	2 0 32 52	2 2 33 26	2 4 34 1							2	0 1
4		1 47 29 59	1 49 30 34	1 51 31 8	1 53 31 43	1 56 32 17	1 58 32 52	2 0 33 26	2 2 34 1							3	0 1
6		1 46 29 59	1 48 30 34	1 50 31 8	1 52 31 43	1 55 32 17	1 56 32 52	1 58 33 26	1 59 34 1							4	0 1
8		1 44 29 59	1 46 30 34	1 48 31 8	1 50 31 43	1 52 32 17	1 53 32 52	1 55 33 26	1 57 34 1							5	0 1
10		1 42 29 59	1 44 30 34	1 46 31 8	1 48 31 43	1 50 32 17	1 51 32 52	1 53 33 26	1 55 34 1							6	0 1
12		1 40 29 59	1 42 30 34	1 44 31 8	1 46 31 43	1 48 32 17	1 49 32 52	1 51 33 26	1 53 34 1							7	0 1
14		1 38 29 59	1 40 30 34	1 42 31 8	1 44 31 43	1 46 32 17	1 47 32 52	1 49 33 26	1 51 34 1							8	0 1
16		1 36 29 59	1 38 30 34	1 40 31 8	1 42 31 43	1 44 32 18	1 45 32 52	1 47 33 27	1 49 34 1							9	0 1
18		1 34 29 59	1 36 30 34	1 38 31 8	1 40 31 43	1 42 32 18	1 43 32 52	1 45 33 27	1 47 34 1							10	0 1
20		1 33 29 59	1 34 30 34	1 36 31 8	1 38 31 43	1 40 32 18	1 41 32 52	1 43 33 27	1 45 34 1							11	0 1
22		1 31 30 0	1 32 30 34	1 34 31 8	1 36 31 43	1 38 32 18	1 39 32 52	1 41 33 27	1 43 34 1							12	0 1
24		1 29 30 0	1 31 30 34	1 32 31 8	1 34 31 43	1 36 32 18	1 37 32 52	1 39 33 27	1 41 34 1							13	0 1
26		1 27 30 0	1 29 30 34	1 30 31 8	1 32 31 43	1 34 32 18	1 35 32 52	1 37 33 27	1 39 34 1							14	0 1
28		1 25 30 0	1 27 30 34	1 28 31 8	1 30 31 43	1 32 32 18	1 33 32 52	1 35 33 27	1 37 34 1							15	0 1
30		1 23 30 0	1 25 30 34	1 26 31 8	1 28 31 43	1 30 32 18	1 31 32 52	1 33 33 27	1 35 34 1							16	0 1
32		1 21 30 0	1 23 30 34	1 24 31 8	1 26 31 43	1 28 32 18	1 29 32 52	1 31 33 27	1 33 34 1							17	0 1
34		1 20 30 0	1 21 30 34	1 23 31 8	1 24 31 43	1 26 32 18	1 27 32 52	1 29 33 27	1 31 34 1							18	0 1
36		1 18 30 0	1 19 30 34	1 21 31 8	1 22 31 43	1 24 32 18	1 25 32 52	1 27 33 27	1 29 34 1							19	0 1
38		1 16 30 0	1 17 30 34	1 19 31 8	1 20 31 43	1 22 32 18	1 23 32 52	1 25 33 27	1 27 34 1							20	0 1
40		1 14 30 0	1 15 30 34	1 17 31 8	1 18 31 43	1 20 32 18	1 21 32 52	1 23 33 27	1 25 34 1							21	0 1
42		1 12 30 0	1 14 30 34	1 15 31 8	1 16 31 43	1 18 32 18	1 19 32 52	1 21 33 27	1 23 34 1							22	0 1
44		1 10 30 0	1 12 30 34	1 13 31 8	1 14 31 43	1 16 32 18	1 17 32 52	1 19 33 27	1 21 34 1							23	0 1
46		1 9 30 0	1 10 30 34	1 11 31 8	1 12 31 43	1 14 32 18	1 15 32 52	1 17 33 27	1 19 34 1							24	0 1
48		1 7 30 0	1 8 30 34	1 9 31 8	1 10 31 43	1 12 32 18	1 13 32 52	1 15 33 27	1 17 34 1							25	0 1
50		1 5 30 0	1 6 30 34	1 7 31 8	1 8 31 43	1 10 32 18	1 11 32 52	1 13 33 27	1 15 34 1							26	0 1
52		1 3 30 0	1 4 30 34	1 5 31 8	1 6 31 43	1 8 32 18	1 9 32 52	1 11 33 27	1 13 34 1							27	0 1
54		1 1 30 0	1 2 30 34	1 3 31 8	1 4 31 43	1 6 32 18	1 7 32 52	1 9 33 27	1 11 34 1							28	0 1
56		0 59 30 0	1 0 30 34	1 2 31 8	1 3 31 43	1 5 32 18	1 6 32 52	1 8 33 27	1 10 34 1							29	0 1
58		0 57 30 0	0 58 30 34	1 0 31 8	1 1 31 43	1 3 32 18	1 4 32 52	1 6 33 27	1 8 34 1							30	0 1
89°		54'	55'	56'	57'	58'	59'	60'	61'							31	0 1
0'		0 56 30 0	0 57 30 34	0 58 31 8	0 59 31 44	1 0 32 18	1 1 32 52	1 2 33 27	1 3 34 1							32	0 1
2		0 54 30 0	0 55 30 34	0 56 31 8	0 57 31 44	0 58 32 18	0 59 32 52	1 0 33 27	1 1 34 1							33	0 1
4		0 52 30 0	0 53 30 34	0 54 31 8	0 55 31 44	0 56 32 18	0 57 32 52	0 58 33 27	0 59 34 1							34	0 1
6		0 50 30 0	0 51 30 34	0 52 31 8	0 53 31 44	0 54 32 18	0 55 32 52	0 56 33 27	0 57 34 1							35	0 1
8		0 48 30 0	0 49 30 34	0 50 31 8	0 51 31 44	0 52 32 18	0 53 32 52	0 54 33 27	0 55 34 1							36	0 1
10		0 47 30 0	0 47 30 34	0 48 31 8	0 49 31 44	0 50 32 18	0 51 32 52	0 52 33 27	0 53 34 1							37	0 1
12		0 45 30 0	0 46 30 34	0 46 31 8	0 47 31 44	0 48 32 18	0 49 32 52	0 50 33 27	0 51 34 1							38	0 1
14		0 43 30 0	0 44 30 34	0 45 31 8	0 46 31 44	0 46 32 18	0 47 32 52	0 48 33 27	0 49 34 1							39	0 1
16		0 41 30 0	0 42 30 35	0 43 31 8	0 44 31 44	0 44 32 18	0 45 32 52	0 46 33 27	0 47 34 1							40	0 1
18		0 39 30 0	0 40 30 35	0 41 31 8	0 41 31 44	0 42 32 18	0 43 32 52	0 44 33 27	0 45 34 1							41	0 1
20		0 38 30 0	0 38 30 35	0 39 31 8	0 39 31 44	0 40 32 18	0 41 32 52	0 42 33 27	0 43 34 1							42	0 1
22		0 36 30 0	0 36 30 35	0 37 31 8	0 38 31 44	0 38 32 18	0 39 32 52	0 40 33 27	0 41 34 1							43	0 1
24		0 34 30 0	0 35 30 35	0 35 31 8	0 36 31 44	0 36 32 18	0 37 32 52	0 38 33 27	0 39 34 1							44	0 1
26		0 32 30 0	0 33 30 35	0 33 31 8	0 34 31 44	0 34 32 18	0 35 32 52	0 36 33 27	0 37 34 1							45	0 1
28		0 31 30 0	0 31 30 35	0 31 31 8	0 32 31 44	0 32 32 18	0 33 32 52	0 34 33 27	0 35 34 1							46	0 1
30		0 29 30 0	0 29 30 35	0 30 31 10	0 30 31 44	0 30 32 18	0 31 32 52	0 32 33 27	0 33 34 1							47	0 1
32		0 27 30 0	0 27 30 35	0 28 31 10	0 28 31 44	0 28 32 18	0 29 32 52	0 30 33 27	0 31 34 1							48	0 1
34		0 25 30 0	0 26 30 35	0 26 31 10	0 26 31 44	0 26 32 18	0 27 32 52	0 28 33 27	0 29 34 1							49	0 1
36		0 23 30 0	0 24 30 35	0 24 31 10	0 24 31 44	0 24 32 18	0 25 32 52	0 26 33 27	0 27 34 1							50	0 1
38		0 22 30 0	0 22 30 35	0 22 31 10	0 22 31 44	0 22 32 18	0 23 32 52	0 24 33 27	0 25 34 1							51	0 1
40		0 20 30 0	0 20 30 35	0 20 31 10	0 20 31 44	0 20 32 18	0 21 32 52	0 22 33 27	0 23 34 1							52	0 1
42		0 18 30 0	0 18 30 35	0 18 31 10	0 18 31 44	0 18 32 18	0 19 32 52	0 20 33 27	0 21 34 1							53	0 1
44		0 16 30 0	0 16 30 35	0 16 31 10	0 17 31 44	0 17 32 18	0 17 32 52	0 18 33 27	0 19 34 1							54	0 1
46		0 15 30 0	0 15 30 35	0 15 31 10	0 15 31 43	0 15 32 18	0 15 32 52	0 16 33 27	0 17 34 1							55	0 1
48		0 13 30 0	0 13 30 35	0 13 31 10	0 13 31 45	0 13 32 19	0 13 32 54	0 14 33 28	0 15 34 1							56	0 1
50		0 11 30 0	0 11 30 35	0 11 31 10	0 11 31 45	0 11 32 19	0 11 32 54	0 12 33 28	0 13 34 1							57	0 1
52		0 9 30 0	0 9 30 35	0 9 31 10	0 9 31 45	0 9 32 19	0 9 32 54	0 10 33 28	0 11 34 1							58	0 1
54		0 7 30 0	0 7 30 35	0 7 31 10	0 7 31 45	0 7 32 19	0 7 32 54	0 8 33 28	0 9 34 1							59	0 1
56		0 5 30 0	0 5 30 35	0 5 31 10	0 5 31 45	0 5 32 19	0 5 32 54	0 6 33 28	0 7 34 1							60	0 1
58		0 4 30 0	0 4 30 35	0 4 31 10	0 4 31 45	0 4 32 19	0 4 32 54	0 5 33 28	0 6 34 1							61	0 1

Traverse Table.

(x.)

Distance		1		2		3		4		5		6		7		8		
Course	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Course	
1	01.0 00.0	02.0 00.1	03.0 00.1	04.0 00.2	05.0 00.2	06.0 00.3	07.0 00.3	08.0 00.4	79									
2	01.0 00.1	02.0 00.2	03.0 00.3	04.0 00.4	05.0 00.5	06.0 00.6	07.0 00.7	08.0 00.8	78									
3	01.0 00.1	02.0 00.3	03.0 00.4	04.0 00.6	04.9 00.7	05.9 00.9	06.9 01.0	07.9 01.2	77									
4	01.0 00.2	02.0 00.4	02.9 00.6	03.9 00.8	04.9 01.0	05.9 01.2	06.9 01.4	07.8 01.6	76									
5	01.0 00.2	01.9 00.5	02.9 00.7	03.9 01.0	04.9 01.2	05.8 01.5	06.8 01.7	07.8 01.9	75									
6	01.0 00.3	01.9 00.6	02.9 00.9	03.8 01.2	04.8 01.5	05.7 01.7	06.7 02.0	07.7 02.3	74									
7	00.9 00.3	01.9 00.7	02.8 01.0	03.8 01.3	04.7 01.7	05.6 02.0	06.6 02.4	07.5 02.7	73									
8	00.9 00.4	01.8 00.8	02.8 01.1	03.7 01.5	04.6 01.9	05.5 02.3	06.5 02.7	07.4 03.1	72									
9	00.9 00.4	01.8 00.9	02.7 01.3	03.6 01.7	04.5 02.1	05.4 02.6	06.3 03.0	07.2 03.4	71									
10	00.9 00.5	01.8 00.9	02.6 01.4	03.5 01.9	04.4 02.4	05.3 02.8	06.2 03.3	07.1 03.8	70									
11	00.9 00.5	01.7 01.0	02.6 01.5	03.4 02.1	04.3 02.6	05.1 03.1	06.0 03.6	06.9 04.1	69									
12	00.8 00.6	01.7 01.1	02.5 01.7	03.3 02.2	04.2 02.8	05.0 03.3	05.8 03.9	06.7 04.4	68									
13	00.8 00.6	01.6 01.2	02.4 01.8	03.2 02.4	04.0 03.0	04.8 03.6	05.6 04.2	06.4 04.8	67									
14	00.8 00.6	01.5 01.3	02.3 01.9	03.1 02.5	03.9 03.2	04.6 03.8	05.4 04.4	06.2 05.1	66									
15	00.7 00.7	01.5 01.3	02.2 02.0	03.0 02.7	03.7 03.4	04.4 04.0	05.2 04.7	05.9 05.4	65									
16	00.7 00.7	01.4 01.4	02.1 02.1	02.8 02.8	03.5 03.5	04.2 04.2	04.9 04.9	05.7 05.7	64									
17	01.0 00.0	02.0 00.0	03.0 00.1	04.0 00.1	05.0 00.1	06.0 00.1	07.0 00.1	08.0 00.1	89									
18	01.0 00.0	02.0 00.1	03.0 00.1	04.0 00.1	05.0 00.2	06.0 00.2	07.0 00.2	08.0 00.3	88									
19	01.0 00.1	02.0 00.1	03.0 00.2	04.0 00.2	05.0 00.3	06.0 00.3	07.0 00.4	08.0 00.4	87									
20	01.0 00.1	02.0 00.1	03.0 00.2	04.0 00.3	05.0 00.3	06.0 00.4	07.0 00.5	08.0 00.6	86									
21	01.0 00.1	02.0 00.2	03.0 00.3	04.0 00.3	05.0 00.4	06.0 00.5	07.0 00.6	08.0 00.7	85									
22	01.0 00.1	02.0 00.2	03.0 00.3	04.0 00.4	05.0 00.5	06.0 00.6	07.0 00.7	08.0 00.8	84									
23	01.0 00.1	02.0 00.2	03.0 00.4	04.0 00.5	05.0 00.6	06.0 00.7	06.9 00.9	07.9 01.0	83									
24	01.0 00.1	02.0 00.3	03.0 00.4	04.0 00.6	05.0 00.7	05.9 00.8	06.9 01.0	07.9 01.1	82									
25	01.0 00.2	02.0 00.3	03.0 00.5	04.0 00.6	04.9 00.8	05.9 00.9	06.9 01.1	07.9 01.3	81									
26	01.0 00.2	02.0 00.3	03.0 00.5	03.9 00.7	04.9 00.9	05.9 01.0	06.9 01.2	07.9 01.4	80									
27	01.0 00.2	02.0 00.4	02.9 00.6	03.9 00.8	04.9 01.0	05.9 01.1	06.9 01.3	07.9 01.5	79									
28	01.0 00.2	02.0 00.4	02.9 00.6	03.9 00.8	04.9 01.0	05.9 01.2	06.8 01.5	07.8 01.7	78									
29	01.0 00.2	01.9 00.4	02.9 00.7	03.9 00.9	04.9 01.1	05.8 01.3	06.8 01.6	07.8 01.8	77									
30	01.0 00.2	01.9 00.5	02.9 00.7	03.9 01.0	04.9 01.2	05.8 01.5	06.8 01.7	07.8 01.9	76									
31	01.0 00.3	01.9 00.5	02.9 00.8	03.9 01.0	04.8 01.3	05.8 01.6	06.8 01.8	07.7 02.1	75									
32	01.0 00.3	01.9 00.6	02.9 00.8	03.8 01.1	04.8 01.4	05.8 01.7	06.7 01.9	07.7 02.2	74									
33	01.0 00.3	01.9 00.6	02.9 00.9	03.8 01.2	04.8 01.5	05.7 01.8	06.7 02.0	07.7 02.3	73									
34	01.0 00.3	01.9 00.6	02.9 00.9	03.8 01.2	04.8 01.5	05.7 01.9	06.7 02.2	07.6 02.5	72									
35	00.9 00.3	01.9 00.7	02.8 01.0	03.8 01.3	04.7 01.6	05.7 02.0	06.6 02.3	07.6 02.6	71									
36	00.9 00.3	01.9 00.7	02.8 01.0	03.8 01.4	04.7 01.7	05.6 02.1	06.6 02.4	07.5 02.7	70									
37	00.9 00.4	01.9 00.7	02.8 01.1	03.7 01.4	04.7 01.8	05.6 02.2	06.5 02.5	07.5 02.9	69									
38	00.9 00.4	01.9 00.7	02.8 01.1	03.7 01.5	04.6 01.9	05.6 02.2	06.5 02.6	07.4 03.0	68									
39	00.9 00.4	01.8 00.8	02.8 01.2	03.7 01.6	04.6 02.0	05.5 02.3	06.4 02.7	07.4 03.1	67									
40	00.9 00.4	01.8 00.8	02.7 01.2	03.7 01.6	04.6 02.0	05.5 02.4	06.4 02.8	07.3 03.3	66									
41	00.9 00.4	01.8 00.8	02.7 01.3	03.6 01.7	04.5 02.1	05.4 02.5	06.3 03.0	07.3 03.4	65									
42	00.9 00.4	01.8 00.9	02.7 01.3	03.6 01.8	04.5 02.2	05.4 02.6	06.3 03.1	07.2 03.5	64									
43	00.9 00.5	01.8 00.9	02.7 01.4	03.6 01.8	04.5 02.3	05.3 02.7	06.2 03.2	07.1 03.6	63									
44	00.9 00.5	01.8 00.9	02.6 01.4	03.5 01.9	04.4 02.3	05.3 02.8	06.2 03.3	07.1 03.8	62									
45	00.9 00.5	01.7 01.0	02.6 01.5	03.5 01.9	04.4 02.4	05.2 02.9	06.1 03.4	07.0 03.9	61									
46	00.9 00.5	01.7 01.0	02.6 01.5	03.5 02.0	04.3 02.5	05.2 03.0	06.1 03.5	06.9 04.0	60									
47	00.9 00.5	01.7 01.0	02.6 01.5	03.4 02.1	04.3 02.6	05.1 03.1	06.0 03.6	06.9 04.1	59									
48	00.8 00.5	01.7 01.1	02.5 01.6	03.4 02.1	04.2 02.6	05.1 03.2	05.9 03.7	06.8 04.2	58									
49	00.8 00.5	01.7 01.1	02.5 01.6	03.4 02.2	04.2 02.7	05.0 03.3	05.9 03.8	06.7 04.4	57									
50	00.8 00.6	01.7 01.1	02.5 01.7	03.3 02.2	04.1 02.8	05.0 03.4	05.8 03.9	06.6 04.5	56									
51	00.8 00.6	01.6 01.1	02.5 01.7	03.3 02.3	04.1 02.9	04.9 03.4	05.7 04.0	06.6 04.6	55									
52	00.8 00.6	01.6 01.2	02.4 01.8	03.2 02.4	04.0 02.9	04.9 03.5	05.7 04.1	06.5 04.7	54									
53	00.8 00.6	01.6 01.2	02.4 01.8	03.2 02.4	04.0 03.0	04.8 03.6	05.6 04.2	06.4 04.8	53									
54	00.8 00.6	01.6 01.2	02.4 01.8	03.2 02.5	03.9 03.1	04.7 03.7	05.5 04.3	06.3 04.9	52									
55	00.8 00.6	01.6 01.3	02.3 01.9	03.1 02.5	03.9 03.1	04.7 03.8	05.4 04.4	06.2 05.0	51									
56	00.8 00.6	01.5 01.3	02.3 01.9	03.1 02.6	03.8 03.2	04.6 03.9	05.4 04.5	06.1 05.1	50									
57	00.8 00.7	01.5 01.3	02.3 02.0	03.0 02.6	03.8 03.3	04.5 03.9	05.3 04.6	06.0 05.2	49									
58	00.7 00.7	01.5 01.3	02.2 02.0	03.0 02.7	03.7 03.3	04.5 04.0	05.2 04.7	05.9 05.4	48									
59	00.7 00.7	01.5 01.4	02.2 02.0	02.9 02.7	03.7 03.4	04.4 04.1	05.1 04.8	05.9 05.5	47									
60	00.7 00.7	01.4 01.4	02.2 02.1	02.9 02.8	03.6 03.5	04.3 04.2	05.0 04.9	05.8 05.6	46									
61	00.7 00.7	01.4 01.4	02.1 02.1	02.8 02.8	03.5 03.5	04.2 04.2	04.9 04.9	05.7 05.7	45									
Course	Dep. | Diff. Lat.	Dep. | Diff. Lat.	Dep. | Diff. Lat.	Dep. | Diff. Lat.	Dep. | Diff. Lat.	Dep. | Diff. Lat.	Dep. | Diff. Lat.	Dep. | Diff. Lat.	Course									

Traverse Table.

(x.)

Distance.		9	10	11	12	13	14	15	16	
Cross.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Cross.
1	09.0 00.4	10.0 00.5	11.0 00.5	12.0 00.6	13.0 00.6	14.0 00.7	15.0 00.7	16.0 00.8		7
2	09.0 00.9	10.0 01.0	10.9 01.1	11.9 01.2	12.9 01.3	13.9 01.4	14.9 01.5	15.9 01.6		8
3	08.9 01.3	09.9 01.5	10.9 01.6	11.9 01.8	12.9 01.9	13.8 02.1	14.8 02.2	15.8 02.3		9
4	08.8 01.8	09.8 02.0	10.8 02.1	11.8 02.3	12.7 02.5	13.7 02.7	14.7 02.9	15.7 03.1		10
5	08.7 02.2	09.7 02.4	10.7 02.7	11.6 02.9	12.6 03.2	13.6 03.4	14.6 03.6	15.5 03.9		11
6	08.6 02.6	09.6 02.9	10.5 03.2	11.5 03.5	12.4 03.8	13.4 04.1	14.4 04.4	15.3 04.6		12
7	08.5 03.0	09.4 03.4	10.4 03.7	11.3 04.0	12.2 04.4	13.2 04.7	14.1 05.1	15.1 05.4		13
8	08.3 03.4	09.2 03.8	10.2 04.2	11.1 04.6	12.0 05.0	12.9 05.4	13.9 05.7	14.8 06.1		14
9	08.1 03.8	09.0 04.3	09.9 04.7	10.8 05.1	11.8 05.6	12.7 06.0	13.6 06.4	14.5 06.8		15
10	07.9 04.2	08.8 04.7	09.7 05.2	10.6 05.7	11.5 06.1	12.3 06.6	13.2 07.1	14.1 07.5		16
11	07.7 04.6	08.6 05.1	09.4 05.7	10.3 06.2	11.2 06.7	12.0 07.2	12.9 07.7	13.7 08.2		17
12	07.5 05.0	08.3 05.6	09.1 06.1	10.0 06.7	10.8 07.2	11.6 07.8	12.5 08.3	13.3 08.9		18
13	07.2 05.4	08.0 06.0	08.8 06.6	09.6 07.1	10.4 07.7	11.2 08.3	12.0 08.9	12.8 09.5		19
14	07.0 05.7	07.7 06.3	08.5 07.0	09.3 07.6	10.1 08.2	10.8 08.9	11.6 09.5	12.4 10.1		20
15	06.7 06.0	07.4 06.7	08.2 07.4	08.9 08.1	09.6 08.7	10.4 09.4	11.1 10.1	11.9 10.7		21
16	06.4 06.4	07.1 07.1	07.8 07.8	08.5 08.5	09.2 09.2	09.9 09.9	10.6 10.6	11.3 11.3		22
17	09.0 00.2	10.0 00.2	11.0 00.2	12.0 00.2	13.0 00.2	14.0 00.2	15.0 00.3	16.0 00.3		23
18	09.0 00.3	10.0 00.3	11.0 00.4	12.0 00.4	13.0 00.5	14.0 00.5	15.0 00.5	16.0 00.6		24
19	09.0 00.5	10.0 00.5	11.0 00.6	12.0 00.6	13.0 00.7	14.0 00.7	15.0 00.8	16.0 00.8		25
20	09.0 00.6	10.0 00.7	11.0 00.8	12.0 00.8	13.0 00.9	14.0 01.0	15.0 01.0	16.0 01.1		26
21	09.0 00.8	10.0 00.9	11.0 01.0	12.0 01.0	13.0 01.1	13.9 01.2	14.9 01.3	15.9 01.4		27
22	09.0 00.9	09.9 01.0	10.9 01.1	11.9 01.3	12.9 01.4	13.9 01.5	14.9 01.6	15.9 01.7		28
23	08.9 01.1	09.9 01.2	10.9 01.3	11.9 01.5	12.9 01.6	13.9 01.7	14.9 01.8	15.9 01.9		29
24	08.9 01.3	09.9 01.4	10.9 01.5	11.9 01.7	12.9 01.8	13.9 01.9	14.9 02.1	15.8 02.2		30
25	08.9 01.4	09.9 01.6	10.9 01.7	11.9 01.9	12.8 02.0	13.8 02.2	14.8 02.3	15.8 02.5		31
26	08.9 01.6	09.8 01.7	10.8 01.9	11.8 02.1	12.8 02.3	13.8 02.4	14.8 02.6	15.8 02.8		32
27	08.8 01.7	09.8 01.9	10.8 02.1	11.8 02.3	12.8 02.5	13.7 02.7	14.7 02.9	15.7 03.1		33
28	08.8 01.9	09.8 02.1	10.8 02.3	11.7 02.5	12.7 02.7	13.7 02.9	14.7 03.1	15.7 03.3		34
29	08.8 02.0	09.7 02.2	10.7 02.5	11.7 02.7	12.7 02.9	13.6 03.1	14.6 03.4	15.6 03.6		35
30	08.7 02.2	09.7 02.4	10.7 02.7	11.6 02.9	12.6 03.1	13.6 03.4	14.6 03.6	15.5 03.9		36
31	08.7 02.3	09.7 02.6	10.6 02.8	11.6 03.1	12.6 03.4	13.5 03.6	14.5 03.9	15.5 04.1		37
32	08.7 02.5	09.6 02.8	10.6 03.0	11.5 03.3	12.5 03.6	13.5 03.9	14.4 04.1	15.4 04.4		38
33	08.6 02.6	09.6 02.9	10.5 03.2	11.5 03.5	12.4 03.8	13.4 04.1	14.3 04.4	15.3 04.7		39
34	08.6 02.8	09.5 03.1	10.5 03.4	11.4 03.7	12.4 04.0	13.3 04.3	14.3 04.6	15.2 04.9		40
35	08.5 02.9	09.5 03.3	10.4 03.6	11.3 03.9	12.3 04.2	13.2 04.6	14.2 04.9	15.1 05.2		41
36	08.5 03.1	09.4 03.4	10.3 03.8	11.3 04.1	12.2 04.4	13.2 04.8	14.1 05.1	15.0 05.5		42
37	08.4 03.2	09.3 03.6	10.3 03.9	11.2 04.3	12.1 04.7	13.1 05.0	14.0 05.4	14.9 05.7		43
38	08.3 03.4	09.3 03.7	10.2 04.1	11.1 04.5	12.1 04.9	13.0 05.2	13.9 05.6	14.8 06.0		44
39	08.3 03.5	09.2 03.9	10.1 04.3	11.0 04.7	12.0 05.1	12.9 05.5	13.8 05.9	14.7 06.3		45
40	08.2 03.7	09.1 04.1	10.0 04.5	11.0 04.9	11.9 05.3	12.8 05.7	13.7 06.1	14.6 06.5		46
41	08.2 03.8	09.1 04.2	10.0 04.6	10.9 05.1	11.8 05.5	12.7 05.9	13.6 06.3	14.5 06.8		47
42	08.1 03.9	09.0 04.4	09.9 04.8	10.8 05.3	11.7 05.7	12.6 06.1	13.5 06.6	14.4 07.0		48
43	08.0 04.1	08.9 04.5	09.8 05.0	10.7 05.4	11.6 05.9	12.5 06.4	13.4 06.8	14.3 07.3		49
44	07.9 04.2	08.8 04.7	09.7 05.2	10.6 05.6	11.5 06.1	12.4 06.6	13.2 07.0	14.1 07.5		50
45	07.9 04.4	08.7 04.8	09.6 05.3	10.5 05.8	11.4 06.3	12.2 06.8	13.1 07.3	14.0 07.8		51
46	07.8 04.5	08.7 05.0	09.5 05.5	10.4 06.0	11.3 06.5	12.1 07.0	13.0 07.5	13.9 08.0		52
47	07.7 04.6	08.6 05.2	09.4 05.7	10.3 06.2	11.1 06.7	12.0 07.2	12.9 07.7	13.7 08.2		53
48	07.6 04.8	08.5 05.3	09.3 05.8	10.2 06.4	11.0 06.9	11.9 07.4	12.7 07.9	13.6 08.5		54
49	07.5 04.9	08.4 05.4	09.2 06.0	10.1 06.5	10.9 07.1	11.7 07.6	12.6 08.2	13.4 08.7		55
50	07.5 05.0	08.3 05.6	09.1 06.2	09.9 06.7	10.8 07.3	11.6 07.8	12.4 08.4	13.3 08.9		56
51	07.4 05.2	08.2 05.7	09.0 06.3	09.8 06.9	10.6 07.5	11.5 08.0	12.3 08.6	13.1 09.2		57
52	07.3 05.3	08.1 05.9	08.9 06.5	09.7 07.1	10.5 07.6	11.3 08.2	12.1 08.8	12.9 09.4		58
53	07.2 05.4	08.0 06.0	08.8 06.6	09.6 07.2	10.4 07.8	11.2 08.4	12.0 09.0	12.8 09.6		59
54	07.1 05.5	07.9 06.2	08.7 06.8	09.5 07.4	10.2 08.0	11.0 08.6	11.8 09.2	12.6 09.9		60
55	07.0 05.7	07.8 06.3	08.5 06.9	09.3 07.6	10.1 08.2	10.9 08.8	11.7 09.4	12.4 10.1		61
56	06.9 05.8	07.7 06.4	08.4 07.1	09.2 07.7	10.0 08.4	10.7 09.0	11.5 09.6	12.3 10.3		62
57	06.8 05.9	07.5 06.6	08.3 07.2	09.1 07.9	09.8 08.5	10.6 09.2	11.3 09.8	12.1 10.5		63
58	06.7 06.0	07.4 06.7	08.2 07.4	08.9 08.0	09.7 08.7	10.4 09.4	11.1 10.0	11.9 10.7		64
59	06.6 06.1	07.3 06.8	08.0 07.5	08.8 08.2	09.5 08.9	10.2 09.5	11.0 10.2	11.7 10.9		65
60	06.5 06.3	07.2 06.9	07.9 07.6	08.6 08.3	09.4 09.0	10.1 09.7	10.8 10.4	11.5 11.1		66
61	06.4 06.4	07.1 07.1	07.8 07.8	08.5 08.5	09.2 09.2	09.9 09.9	10.6 10.6	11.3 11.3		67

'Traverse Table.

(x.)

17		18		19		20		21		22		23		24	
Dist.	Lat. | Dep.	Dist.	Lat. | Dep.	Dist.	Lat. | Dep.	Dist.	Lat. | Dep.	Dist.	Lat. | Dep.	Dist.	Lat. | Dep.	Dist.	Lat. | Dep.	Dist.	Lat. | Dep.
1	17.0 00.8	18.0 00.9	19.0 00.9	20.0 01.0	21.0 01.0	22.0 01.1	23.0 01.1	24.0 01.2	71						
2	16.9 01.7	17.9 01.8	18.9 01.9	19.9 02.0	20.9 02.1	21.9 02.2	22.9 02.3	23.9 02.4	72						
3	16.8 02.5	17.8 02.6	18.8 02.8	19.8 02.9	20.8 03.1	21.8 03.2	22.7 03.4	23.7 03.5	73						
4	16.7 03.3	17.7 03.5	18.6 03.7	19.6 03.9	20.6 04.1	21.6 04.3	22.6 04.5	23.5 04.7	74						
5	16.5 04.1	17.5 04.4	18.4 04.6	19.4 04.9	20.4 05.1	21.3 05.3	22.3 05.6	23.3 05.8	75						
6	16.3 04.9	17.2 05.2	18.2 05.5	19.1 05.8	20.1 06.1	21.1 06.4	22.0 06.7	23.0 07.0	76						
7	16.0 05.7	17.0 06.1	17.9 06.4	18.8 06.7	19.8 07.1	20.7 07.4	21.7 07.7	22.6 08.1	77						
8	15.7 06.5	16.6 06.9	17.6 07.3	18.5 07.7	19.4 08.0	20.3 08.4	21.3 08.8	22.2 09.2	78						
9	15.4 07.3	16.3 07.7	17.2 08.1	18.1 08.6	19.0 09.0	19.9 09.4	20.8 09.8	21.7 10.3	79						
10	15.0 08.0	15.9 08.5	16.8 09.0	17.6 09.4	18.5 09.9	19.4 10.4	20.3 10.8	21.2 11.3	80						
11	14.6 08.7	15.4 09.3	16.3 09.8	17.2 10.3	18.0 10.8	18.9 11.3	19.7 11.8	20.6 12.3	81						
12	14.1 09.4	15.0 10.0	15.8 10.6	16.6 11.1	17.5 11.7	18.3 12.2	19.1 12.8	20.0 13.3	82						
13	13.7 10.1	14.5 10.7	15.3 11.3	16.1 11.9	16.9 12.5	17.7 13.1	18.5 13.7	19.3 14.3	83						
14	13.1 10.8	13.9 11.4	14.7 12.0	15.5 12.7	16.3 13.3	17.0 14.0	17.8 14.6	18.5 15.2	84						
15	12.6 11.4	13.3 12.1	14.1 12.8	14.8 13.4	15.6 14.1	16.3 14.8	17.0 15.4	17.8 16.1	85						
16	12.0 12.0	12.7 12.7	13.4 13.4	14.1 14.1	14.8 14.8	15.6 15.6	16.3 16.3	17.0 17.0	86						
17	17.0 00.3	18.0 00.3	19.0 00.3	20.0 00.3	21.0 00.4	22.0 00.4	23.0 00.4	24.0 00.4	87						
18	17.0 00.6	18.0 00.6	19.0 00.7	20.0 00.7	21.0 00.7	22.0 00.8	23.0 00.8	24.0 00.8	88						
19	17.0 00.9	18.0 00.9	19.0 01.0	20.0 01.0	21.0 01.1	22.0 01.2	23.0 01.2	24.0 01.3	89						
20	17.0 01.2	18.0 01.3	19.0 01.3	20.0 01.4	20.9 01.5	21.9 01.5	22.9 01.6	23.9 01.7	90						
21	16.9 01.5	17.9 01.6	18.9 01.7	19.9 01.7	20.9 01.8	21.9 01.9	22.9 02.0	23.9 02.1	91						
22	16.9 01.8	17.9 01.9	18.9 02.0	19.9 02.1	20.9 02.2	21.9 02.3	22.9 02.4	23.9 02.5	92						
23	16.9 02.1	17.9 02.2	18.9 02.3	19.9 02.4	20.8 02.6	21.8 02.7	22.8 02.8	23.8 02.9	93						
24	16.8 02.4	17.8 02.5	18.8 02.6	19.8 02.8	20.8 02.9	21.8 03.1	22.8 03.2	23.8 03.3	94						
25	16.8 02.7	17.8 02.8	18.8 03.0	19.8 03.1	20.7 03.3	21.7 03.4	22.7 03.6	23.7 03.8	95						
26	16.7 03.0	17.7 03.1	18.7 03.3	19.7 03.5	20.7 03.6	21.7 03.8	22.7 04.0	23.6 04.2	96						
27	16.7 03.2	17.7 03.4	18.7 03.6	19.6 03.8	20.6 04.0	21.6 04.2	22.6 04.4	23.6 04.6	97						
28	16.6 03.5	17.6 03.7	18.6 04.0	19.6 04.2	20.5 04.4	21.5 04.6	22.5 04.8	23.5 05.0	98						
29	16.6 03.8	17.5 04.0	18.5 04.3	19.5 04.5	20.5 04.7	21.4 04.9	22.4 05.2	23.4 05.4	99						
30	16.5 04.1	17.5 04.4	18.4 04.6	19.4 04.8	20.4 05.1	21.3 05.3	22.3 05.6	23.3 05.8	100						
31	16.4 04.4	17.4 04.7	18.4 04.9	19.3 05.2	20.3 05.4	21.3 05.7	22.2 06.0	23.2 06.2							
32	16.3 04.7	17.3 05.0	18.3 05.2	19.2 05.5	20.2 05.8	21.1 06.1	22.1 06.3	23.1 06.6							
33	16.3 05.0	17.2 05.3	18.2 05.6	19.1 05.8	20.1 06.1	21.0 06.4	22.0 06.7	23.0 07.0							
34	16.2 05.3	17.1 05.6	18.1 05.9	19.0 06.2	20.0 06.5	20.9 06.8	21.9 07.1	22.8 07.4							
35	16.1 05.5	17.0 05.9	18.0 06.2	18.9 06.5	19.9 06.8	20.8 07.2	21.7 07.5	22.7 07.8							
36	16.0 05.8	16.9 06.2	17.9 06.5	18.8 06.8	19.7 07.2	20.7 07.5	21.6 07.9	22.6 08.2							
37	15.9 06.1	16.8 06.5	17.7 06.8	18.7 07.2	19.6 07.5	20.5 07.9	21.5 08.2	22.4 08.6							
38	15.8 06.4	16.7 06.7	17.6 07.1	18.5 07.5	19.5 07.9	20.4 08.2	21.3 08.6	22.3 09.0							
39	15.6 06.6	16.6 07.0	17.5 07.4	18.4 07.8	19.3 08.2	20.3 08.6	21.2 09.0	22.1 09.4							
40	15.5 06.9	16.4 07.3	17.4 07.7	18.3 08.1	19.2 08.5	20.1 08.9	21.0 09.4	21.9 09.8							
41	15.4 07.2	16.3 07.6	17.2 08.0	18.1 08.5	19.0 08.9	19.9 09.3	20.8 09.7	21.8 10.1							
42	15.3 07.5	16.2 07.9	17.1 08.3	18.0 08.8	18.9 09.2	19.8 09.6	20.7 10.1	21.6 10.5							
43	15.1 07.7	16.0 08.2	16.9 08.6	17.8 09.1	18.7 09.5	19.6 10.0	20.5 10.4	21.4 10.9							
44	15.0 08.0	15.9 08.5	16.8 08.9	17.7 09.4	18.5 09.9	19.4 10.3	20.3 10.8	21.2 11.3							
45	14.9 08.2	15.7 08.7	16.6 09.2	17.5 09.7	18.4 10.2	19.2 10.7	20.1 11.2	21.0 11.6							
46	14.7 08.5	15.6 09.0	16.5 09.5	17.3 10.0	18.2 10.5	19.1 11.0	19.9 11.5	20.8 12.0							
47	14.6 08.8	15.4 09.3	16.3 09.8	17.1 10.3	18.0 10.8	18.9 11.3	19.7 11.8	20.6 12.4							
48	14.4 09.0	15.3 09.5	16.1 10.1	17.0 10.6	17.8 11.1	18.7 11.7	19.5 12.2	20.4 12.7							
49	14.3 09.3	15.1 09.8	15.9 10.3	16.8 10.9	17.6 11.4	18.5 12.0	19.3 12.5	20.1 13.1							
50	14.1 09.5	14.9 10.1	15.8 10.6	16.6 11.2	17.4 11.7	18.2 12.3	19.1 12.9	19.9 13.4							
51	13.9 09.8	14.7 10.3	15.6 10.9	16.4 11.5	17.2 12.0	18.0 12.6	18.8 13.2	19.7 13.8							
52	13.8 10.0	14.6 10.6	15.4 11.2	16.2 11.8	17.0 12.3	17.8 12.9	18.6 13.5	19.4 14.1							
53	13.6 10.2	14.4 10.8	15.2 11.4	16.0 12.0	16.8 12.6	17.6 13.2	18.4 13.8	19.2 14.4							
54	13.4 10.5	14.2 11.1	15.0 11.7	15.8 12.3	16.5 12.9	17.3 13.5	18.1 14.2	18.9 14.8							
55	13.2 10.7	14.0 11.3	14.8 12.0	15.5 12.6	16.3 13.2	17.1 13.8	17.9 14.5	18.7 15.1							
56	13.0 10.9	13.8 11.6	14.6 12.2	15.3 12.9	16.1 13.5	16.9 14.1	17.6 14.8	18.4 15.4							
57	12.8 11.2	13.6 11.8	14.3 12.5	15.1 13.1	15.8 13.8	16.6 14.4	17.4 15.1	18.1 15.7							
58	12.6 11.4	13.4 12.0	14.1 12.7	14.9 13.4	15.6 14.1	16.3 14.7	17.1 15.4	17.8 16.1							
59	12.4 11.6	13.2 12.3	13.9 13.0	14.6 13.6	15.4 14.3	16.1 15.0	16.8 15.7	17.6 16.4							
60	12.2 11.8	12.9 12.5	13.7 13.2	14.4 13.9	15.1 14.6	15.8 15.3	16.5 16.0	17.3 16.7							
61	12.0 12.0	12.7 12.7	13.4 13.4	14.1 14.1	14.8 14.8	15.6 15.6	16.3 16.3	17.0 17.0							
62	17.0 00.3	18.0 00.3	19.0 00.3	20.0 00.3	21.0 00.4	22.0 00.4	23.0 00.4	24.0 00.4	87						
63	17.0 00.6	18.0 00.6	19.0 00.7	20.0 00.7	21.0 00.7	22.0 00.8	23.0 00.8	24.0 00.8	88						
64	17.0 00.9	18.0 00.9	19.0 01.0	20.0 01.0	21.0 01.1	22.0 01.2	23.0 01.2	24.0 01.3	89						
65	17.0 01.2	18.0 01.3	19.0 01.3	20.0 01.4	20.9 01.5	21.9 01.5	22.9 01.6	23.9 01.7	90						
66	16.9 01.5	17.9 01.6	18.9 01.7	19.9 01.7	20.9 01.8	21.9 01.9	22.9 02.0	23.9 02.1	91						
67	16.9 01.8	17.9 01.9	18.9 02.0	19.9 02.1	20.9 02.2	21.9 02.3	22.9 02.4	23.9 02.5	92						
68	16.9 02.1	17.9 02.2	18.9 02.3	19.9 02.4	20.8 02.6	21.8 02.7	22.8 02.8	23.8 02.9	93						
69	16.8 02.4	17.8 02.5	18.8 02.6	19.8 02.8	20.8 02.9	21.8 03.1	22.8 03.2	23.8 03.3	94						
70	16.8 02.7	17.8 02.8	18.8 03.0	19.8 03.1	20.7 03.3	21.7 03.4	22.7 03.6	23.7 03.8	95						
71	16.7 03.0	17.7 03.1	18.7 03.3	19.7 03.5	20.7 03.6	21.7 03.8	22.7 04.0	23.6 04.2	96						
72	16.7 03.2	17.7 03.4	18.7 03.6	19.6 03.8	20.6 04.0	21.6 04.2	22.6 04.4	23.6 04.6	97						
73	16.6 03.5	17.6 03.7	18.6 04.0	19.6 04.2	20.5 04.4	21.5 04.6	22.5 04.8	23.5 05.0	98						
74	16.6 03.8	17.5 04.0	18.5 04.3	19.5 04.5	20.5 04.7	21.4 04.9	22.4 05.2	23.4 05.4	99						
75	16.5 04.1	17.5 04.4	18.4 04.6	19.4 04.8	20.4 05.1	21.3 05.3	22.3 05.6	23.3 05.8	100						
76	16.4 04.4	17.4 04.7	18.4 04.9	19.3 05.2	20.3 05.4	21.3 05.7	22.2 06.0	23.2 06.2							
77	16.3 04.7	17.3 05.0	18.3 05.2	19.2 05.5	20.2 05.8	21.1 06.1	22.1 06.3	23.1 06.6							
78	16.3 05.0	17.2 05.3	18.2 05.6	19.1 05.8	20.1 06.1	21.0 06.4	22.0 06.7	23.0 07.0							
79	16.2 05.3	17.1 05.6	18.1 05.9	19.0 06.2	20.0 06.5	20.9 06.8	21.9 07.1	22.8 07.4							
80	16.1 05.5	17.0 05.9	18.0 06.2	18.9 06.5	19.9 06.8	20.8 07.2	21.7 07.5	22.7 07.8							

Traverse Table

(x.)

Distance 25		26		27		28		29		30		31		32	
Cross	Dist. Lat. | Dep.	Dist. Lat. | Dep.	Dist. Lat. | Dep.	Dist. Lat. | Dep.	Dist. Lat. | Dep.	Dist. Lat. | Dep.	Dist. Lat. | Dep.	Dist. Lat. | Dep.	Dist. Lat. | Dep.	Dist. Lat. | Dep.	Dist. Lat. | Dep.	Dist. Lat. | Dep.	Dist. Lat. | Dep.	Dist. Lat. | Dep.	Cross
1	25.0 01.2	26.0 01.3	27.0 01.3	28.0 01.4	29.0 01.4	30.0 01.5	31.0 01.5	32.0 01.6	73						
2	24.9 02.4	25.9 02.5	26.9 02.6	27.9 02.7	28.9 02.8	29.9 02.9	30.9 03.0	31.8 03.1	74						
3	24.7 03.7	25.7 03.8	26.7 04.0	27.7 04.1	28.7 04.3	29.7 04.4	30.7 04.5	31.7 04.7	75						
4	24.5 04.9	25.5 05.1	26.5 05.3	27.5 05.5	28.4 05.7	29.4 05.9	30.4 06.0	31.4 06.2	76						
5	24.3 06.1	25.2 06.3	26.2 06.6	27.2 06.8	28.1 07.0	29.1 07.3	30.1 07.5	31.0 07.8	77						
6	23.9 07.3	24.9 07.5	25.8 07.8	26.8 08.1	27.8 08.4	28.7 08.7	29.7 09.0	30.6 09.3	78						
7	23.5 08.4	24.5 08.8	25.4 09.1	26.4 09.4	27.3 09.8	28.2 10.1	29.2 10.4	30.1 10.8	79						
8	23.1 09.6	24.0 10.0	24.9 10.3	25.9 10.7	26.8 11.1	27.7 11.5	28.6 11.9	29.6 12.2	80						
9	22.6 10.7	23.5 11.1	24.4 11.5	25.3 12.0	26.2 12.4	27.1 12.8	28.0 13.3	28.9 13.7	81						
10	22.1 11.8	22.9 12.3	23.8 12.7	24.7 13.2	25.6 13.7	26.5 14.1	27.3 14.6	28.2 15.1	82						
11	21.4 12.9	22.3 13.4	23.2 13.9	24.0 14.4	24.9 14.9	25.7 15.4	26.6 15.9	27.4 16.4	83						
12	20.8 13.9	21.6 14.4	22.4 15.0	23.3 15.6	24.1 16.1	24.9 16.7	25.8 17.2	26.6 17.8	84						
13	20.1 14.9	20.9 15.5	21.7 16.1	22.6 16.7	23.3 17.3	24.1 17.9	24.9 18.5	25.7 19.1	85						
14	19.3 15.9	20.1 16.5	20.9 17.1	21.6 17.8	22.4 18.4	23.2 19.0	24.0 19.7	24.7 20.3	86						
15	18.5 16.8	19.3 17.5	20.0 18.1	20.7 18.8	21.5 19.5	22.2 20.1	23.0 20.8	23.7 21.5	87						
16	17.7 17.7	18.4 18.4	19.1 19.1	19.8 19.8	20.5 20.5	21.2 21.2	21.9 21.9	22.6 22.6	88						
17	25.0 00.4	26.0 00.5	27.0 00.5	28.0 00.5	29.0 00.5	30.0 00.5	31.0 00.5	32.0 00.6	89						
18	25.0 00.9	26.0 00.9	27.0 00.9	28.0 01.0	29.0 01.0	30.0 01.0	31.0 01.1	32.0 01.1	90						
19	25.0 01.3	26.0 01.4	27.0 01.4	28.0 01.5	29.0 01.5	30.0 01.6	31.0 01.6	32.0 01.7	91						
20	24.9 01.7	25.9 01.8	26.9 01.9	27.9 02.0	28.9 02.0	29.9 02.1	30.9 02.2	31.9 02.2	92						
21	24.9 02.2	25.9 02.3	26.9 02.4	27.9 02.4	28.9 02.5	29.9 02.6	30.9 02.7	31.9 02.8	93						
22	24.9 02.6	25.9 02.7	26.9 02.8	27.8 02.9	28.8 03.0	29.8 03.1	30.8 03.2	31.8 03.3	94						
23	24.8 03.0	25.8 03.2	26.8 03.3	27.8 03.4	28.8 03.5	29.8 03.7	30.8 03.8	31.8 03.9	95						
24	24.8 03.5	25.7 03.6	26.7 03.8	27.7 03.9	28.7 04.0	29.7 04.2	30.7 04.3	31.7 04.5	96						
25	24.7 03.9	25.7 04.1	26.7 04.2	27.7 04.4	28.6 04.5	29.6 04.7	30.6 04.8	31.6 05.0	97						
26	24.6 04.3	25.6 04.5	26.6 04.7	27.6 04.9	28.6 05.0	29.5 05.2	30.5 05.4	31.5 05.6	98						
27	24.5 04.8	25.5 05.0	26.5 05.2	27.5 05.3	28.5 05.5	29.4 05.7	30.4 05.9	31.4 06.1	99						
28	24.5 05.2	25.4 05.4	26.4 05.6	27.4 05.8	28.4 06.0	29.3 06.2	30.3 06.4	31.3 06.7	100						
29	24.4 05.6	25.3 05.8	26.3 06.1	27.3 06.3	28.3 06.5	29.2 06.7	30.2 07.0	31.2 07.2	101						
30	24.3 06.0	25.2 06.3	26.2 06.5	27.2 06.8	28.1 07.0	29.1 07.3	30.1 07.5	31.0 07.7	102						
31	24.1 06.5	25.1 06.7	26.1 07.0	27.0 07.2	28.0 07.5	29.0 07.8	29.9 08.0	30.9 08.3	103						
32	24.0 06.9	25.0 07.2	26.0 07.4	26.9 07.7	27.9 08.0	28.8 08.3	29.8 08.5	30.8 08.8	104						
33	23.9 07.3	24.9 07.6	25.8 07.9	26.8 08.2	27.7 08.5	28.7 08.8	29.6 09.1	30.6 09.4	105						
34	23.8 07.7	24.7 08.0	25.7 08.3	26.6 08.7	27.6 09.0	28.5 09.3	29.5 09.6	30.4 09.9	106						
35	23.6 08.1	24.6 08.5	25.5 08.8	26.5 09.1	27.4 09.4	28.4 09.8	29.3 10.1	30.3 10.4	107						
36	23.5 08.6	24.4 08.9	25.4 09.2	26.3 09.6	27.3 09.9	28.2 10.3	29.1 10.6	30.1 10.9	108						
37	23.3 09.0	24.3 09.3	25.2 09.7	26.1 10.0	27.1 10.4	28.0 10.8	28.9 11.1	29.9 11.5	109						
38	23.2 09.4	24.1 09.7	25.0 10.1	26.0 10.5	26.9 10.9	27.8 11.2	28.7 11.6	29.7 12.0	110						
39	23.0 09.8	23.9 10.2	24.9 10.5	25.8 10.9	26.7 11.3	27.6 11.7	28.5 12.1	29.5 12.5	111						
40	22.8 10.2	23.8 10.6	24.7 11.0	25.6 11.4	26.5 11.8	27.4 12.2	28.3 12.6	29.2 13.0	112						
41	22.7 10.6	23.6 11.0	24.5 11.4	25.4 11.8	26.3 12.3	27.2 12.7	28.1 13.1	29.0 13.5	113						
42	22.5 11.0	23.4 11.4	24.3 11.8	25.2 12.3	26.1 12.7	27.0 13.2	27.9 13.6	28.8 14.0	114						
43	22.3 11.3	23.2 11.8	24.1 12.3	24.9 12.7	25.8 13.2	26.7 13.6	27.6 14.1	28.5 14.5	115						
44	22.1 11.7	23.0 12.2	23.8 12.7	24.7 13.1	25.6 13.6	26.5 14.1	27.4 14.6	28.3 15.0	116						
45	21.9 12.1	22.7 12.6	23.6 13.1	24.5 13.6	25.4 14.1	26.2 14.5	27.1 15.0	28.0 15.5	117						
46	21.7 12.5	22.5 13.0	23.4 13.5	24.2 14.0	25.1 14.5	26.0 15.0	26.8 15.5	27.7 16.0	118						
47	21.4 12.9	22.3 13.4	23.1 13.9	24.0 14.4	24.9 14.9	25.7 15.5	26.6 16.0	27.4 16.5	119						
48	21.2 13.2	22.0 13.8	22.9 14.3	23.7 14.8	24.6 15.4	25.4 15.9	26.3 16.4	27.1 17.0	120						
49	21.0 13.6	21.8 14.2	22.6 14.7	23.5 15.2	24.3 15.8	25.2 16.3	26.0 16.9	26.8 17.4	121						
50	20.7 14.0	21.6 14.5	22.4 15.1	23.2 15.7	24.0 16.2	24.9 16.8	25.7 17.3	26.5 17.9	122						
51	20.5 14.3	21.3 14.9	22.1 15.5	22.9 16.1	23.8 16.6	24.6 17.2	25.4 17.8	26.2 18.4	123						
52	20.2 14.7	21.0 15.3	21.8 15.9	22.7 16.5	23.5 17.0	24.3 17.6	25.1 18.2	25.9 18.8	124						
53	20.0 15.0	20.8 15.6	21.6 16.2	22.4 16.9	23.2 17.5	24.0 18.1	24.8 18.7	25.6 19.3	125						
54	19.7 15.4	20.5 16.0	21.3 16.6	22.1 17.2	22.9 17.9	23.6 18.5	24.4 19.1	25.2 19.7	126						
55	19.4 15.7	20.2 16.4	21.0 17.0	21.8 17.6	22.5 18.3	23.3 18.9	24.1 19.5	24.9 20.1	127						
56	19.2 16.1	19.9 16.7	20.7 17.4	21.4 18.0	22.2 18.6	23.0 19.3	23.7 19.9	24.5 20.6	128						
57	18.9 16.4	19.6 17.1	20.4 17.7	21.1 18.4	21.9 19.0	22.6 19.7	23.4 20.3	24.2 21.0	129						
58	18.6 16.7	19.3 17.4	20.1 18.1	20.8 18.7	21.6 19.4	22.3 20.1	23.0 20.7	23.8 21.4	130						
59	18.3 17.0	19.0 17.7	19.7 18.4	20.5 19.1	21.2 19.8	21.9 20.5	22.7 21.1	23.4 21.8	131						
60	18.0 17.4	18.7 18.1	19.4 18.8	20.1 19.5	20.9 20.1	21.6 20.8	22.3 21.5	23.0 22.2	132						
61	17.7 17.7	18.4 18.4	19.1 19.1	19.8 19.8	20.5 20.5	21.2 21.2	21.9 21.9	22.6 22.6	133						
62	25.0 00.4	26.0 00.5	27.0 00.5	28.0 00.5	29.0 00.5	30.0 00.5	31.0 00.5	32.0 00.6	134						
63	25.0 00.9	26.0 00.9	27.0 00.9	28.0 01.0	29.0 01.0	30.0 01.0	31.0 01.1	32.0 01.1	135						
64	25.0 01.3	26.0 01.4	27.0 01.4	28.0 01.5	29.0 01.5	30.0 01.6	31.0 01.6	32.0 01.7	136						
65	24.9 01.7	25.9 01.8	26.9 01.9	27.9 02.0	28.9 02.0	29.9 02.1	30.9 02.2	31.9 02.2	137						
66	24.9 02.2	25.9 02.3	26.9 02.4	27.9 02.4	28.9 02.5	29.9 02.6	30.9 02.7	31.9 02.8	138						
67	24.9 02.6	25.9 02.7	26.9 02.8	27.8 02.9	28.8 03.0	29.8 03.1	30.8 03.2	31.8 03.3	139						
68	24.8 03.0	25.8 03.2	26.8 03.3	27.8 03.4	28.8 03.5	29.8 03.7	30.8 03.8	31.8 03.9	140						
69	24.8 03.5	25.7 03.6	26.7 03.8	27.7 03.9	28.7 04.0	29.7 04.2	30.7 04.3	31.7 04.5	141						
70	24.7 03.9	25.7 04.1	26.7 04.2	27.7 04.4	28.6 04.5	29.6 04.7	30.6 04.8	31.6 05.0	142						
71	24.6 04.3	25.6 04.5	26.6 04.7	27.6 04.9	28.6 05.0	29.5 05.2	30.5 05.4	31.5 05.6	143						
72	24.5 04.8	25.5 05.0	26.5 05.2	27.5 05.3	28.5 05.5	29.4 05.7	30.4 05.9	31.4 06.1	144						
73	24.5 05.2	25.4 05.4	26.4 05.6	27.4 05.8	28.4 06.0	29.3 06.2	30.3 06.4	31.3 06.7	145						
74	24.4 05.6	25.3 05.8	26.3 06.1	27.3 06.3	28.3 06.5	29.2 06.7	30.2 07.0	31.2 07.2	146						
75	24.3 06.0	25.2 06.3	26.2 06.5	27.2 06.8	28.1 07.0	29.1 07.3	30.1 07.5	31.0 07.7	147						
76	24.1 06.5	25.1 06.7	26.1 07.0	27.0 07.2	28.0 07.5	29.0 07.8	29.9 08.0	30.9 08.3	148						
77	24.0 06.9	25.0 07.2	26.0 07.4	26.9 07.7	27.9 08.0	28.8 08.3	29.8 08.5	30.8 08.8	149	</					

Traverse Table.

(x)

Distance.		33		34		35		36		37		38		39		40		
Crms.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Crms.	
1	33.0 01.6	34.0 01.7	35.0 01.7	36.0 01.8	37.0 01.8	38.0 01.9	39.0 01.9	40.0 02.0	7									
2	32.8 03.2	33.8 03.3	34.8 03.4	35.8 03.5	36.8 03.6	37.8 03.7	38.8 03.8	39.8 03.9	7									
3	32.6 04.8	33.6 05.0	34.6 05.1	35.6 05.3	36.6 05.4	37.6 05.6	38.6 05.7	39.6 05.9	7									
4	32.4 06.4	33.3 06.6	34.3 06.8	35.3 07.0	36.3 07.2	37.3 07.4	38.2 07.6	39.2 07.8	7									
5	32.0 08.0	33.0 08.3	34.0 08.5	34.9 08.7	35.9 09.0	36.9 09.2	37.8 09.5	38.8 09.7	7									
6	31.6 09.6	32.5 09.9	33.5 10.2	34.5 10.4	35.4 10.7	36.4 11.0	37.3 11.3	38.3 11.6	7									
7	31.1 11.1	32.0 11.5	33.0 11.8	33.9 12.1	34.8 12.5	35.8 12.8	36.7 13.1	37.7 13.5	7									
8	30.5 12.6	31.4 13.0	32.3 13.4	33.3 13.8	34.2 14.2	35.1 14.5	36.0 14.9	37.0 15.3	6									
9	29.8 14.1	30.7 14.5	31.6 15.0	32.5 15.4	33.4 15.8	34.4 16.2	35.3 16.7	36.2 17.1	6									
10	29.1 15.6	30.0 16.0	30.9 16.5	31.8 17.0	32.6 17.4	33.5 17.9	34.4 18.4	35.3 18.9	6									
11	28.3 17.0	29.2 17.5	30.0 18.0	30.9 18.5	31.7 19.0	32.6 19.5	33.5 20.0	34.3 20.6	6									
12	27.4 18.3	28.3 18.9	29.1 19.4	29.9 20.0	30.8 20.6	31.6 21.1	32.4 21.7	33.3 22.2	5									
13	26.5 19.7	27.3 20.3	28.1 20.9	28.9 21.4	29.7 22.0	30.5 22.6	31.3 23.2	32.1 23.8	5									
14	25.5 20.9	26.3 21.6	27.1 22.2	27.8 22.8	28.6 23.5	29.4 24.1	30.1 24.7	30.9 25.4	5									
15	24.4 22.2	25.2 22.8	25.9 23.5	26.7 24.2	27.4 24.8	28.2 25.5	28.9 26.2	29.6 26.9	5									
16	23.3 23.3	24.0 24.0	24.7 24.7	25.5 25.5	26.2 26.2	26.9 26.9	27.6 27.6	28.3 28.3	4									
17	33.0 00.6	34.0 00.6	35.0 00.6	36.0 00.6	37.0 00.6	38.0 00.7	39.0 00.7	40.0 00.7	89°									
18	33.0 01.2	34.0 01.2	35.0 01.2	36.0 01.3	37.0 01.3	38.0 01.3	39.0 01.4	40.0 01.4	88									
19	33.0 01.7	34.0 01.8	35.0 01.8	36.0 01.9	36.9 01.9	37.9 02.0	38.9 02.0	39.9 02.1	87									
20	32.9 02.3	33.9 02.4	34.9 02.4	35.9 02.5	36.9 02.6	37.9 02.7	38.9 02.7	39.9 02.8	86									
21	32.9 02.9	33.9 03.0	34.9 03.1	35.9 03.1	36.9 03.2	37.9 03.3	38.9 03.4	39.8 03.5	85									
22	32.8 03.4	33.8 03.6	34.8 03.7	35.8 03.8	36.8 03.9	37.8 04.0	38.8 04.1	39.8 04.2	84									
23	32.8 04.0	33.7 04.1	34.7 04.3	35.7 04.4	36.7 04.5	37.7 04.6	38.7 04.8	39.7 04.9	83									
24	32.7 04.6	33.7 04.7	34.7 04.9	35.6 05.0	36.6 05.1	37.6 05.3	38.6 05.4	39.6 05.6	82									
25	32.6 05.2	33.6 05.3	34.6 05.5	35.6 05.6	36.5 05.8	37.5 05.9	38.5 06.1	39.5 06.3	81									
26	32.5 05.7	33.5 05.9	34.5 06.1	35.5 06.3	36.4 06.4	37.4 06.6	38.4 06.8	39.4 06.9	80									
27	32.4 06.3	33.4 06.5	34.4 06.7	35.3 06.9	36.3 07.1	37.3 07.3	38.3 07.4	39.3 07.6	79									
28	32.3 06.9	33.3 07.1	34.2 07.3	35.2 07.5	36.2 07.7	37.2 07.9	38.1 08.1	39.1 08.3	78									
29	32.2 07.4	33.1 07.6	34.1 07.9	35.1 08.1	36.1 08.3	37.0 08.5	38.0 08.8	39.0 09.0	77									
30	32.0 08.0	33.0 08.2	34.0 08.5	34.9 08.7	35.9 09.0	36.9 09.2	37.8 09.4	38.8 09.7	76									
31	31.9 08.5	32.8 08.8	33.8 09.1	34.8 09.3	35.7 09.6	36.7 09.8	37.7 10.1	38.6 10.4	75									
32	31.7 09.1	32.7 09.4	33.6 09.6	34.6 09.9	35.6 10.2	36.5 10.5	37.5 10.7	38.5 11.0	74									
33	31.6 09.6	32.5 09.9	33.5 10.2	34.4 10.5	35.4 10.8	36.3 11.1	37.3 11.4	38.3 11.7	73									
34	31.4 10.2	32.3 10.5	33.3 10.8	34.2 11.1	35.2 11.4	36.1 11.7	37.1 12.1	38.0 12.4	72									
35	31.2 10.7	32.1 11.1	33.1 11.4	34.0 11.7	35.0 12.0	35.9 12.4	36.9 12.7	37.8 13.0	71									
36	31.0 11.3	31.9 11.6	32.9 12.0	33.8 12.3	34.8 12.7	35.7 13.0	36.6 13.3	37.6 13.7	70									
37	30.8 11.8	31.7 12.2	32.7 12.5	33.6 12.9	34.5 13.3	35.5 13.6	36.4 14.0	37.3 14.3	69									
38	30.6 12.4	31.5 12.7	32.5 13.1	33.4 13.5	34.3 13.9	35.2 14.2	36.2 14.6	37.1 15.0	68									
39	30.4 12.9	31.3 13.3	32.2 13.7	33.1 14.1	34.1 14.5	35.0 14.8	35.9 15.2	36.8 15.6	67									
40	30.1 13.4	31.1 13.8	32.0 14.2	32.9 14.6	33.8 15.0	34.7 15.5	35.6 15.9	36.5 16.3	66									
41	29.9 13.9	30.8 14.4	31.7 14.8	32.6 15.2	33.5 15.6	34.4 16.1	35.3 16.5	36.3 16.9	65									
42	29.7 14.5	30.6 14.9	31.5 15.3	32.4 15.8	33.3 16.2	34.2 16.7	35.1 17.1	36.0 17.5	64									
43	29.4 15.0	30.3 15.4	31.2 15.9	32.1 16.3	33.0 16.8	33.9 17.3	34.7 17.7	35.6 18.2	63									
44	29.1 15.5	30.0 16.0	30.9 16.4	31.8 16.9	32.7 17.4	33.6 17.8	34.4 18.3	35.3 18.8	62									
45	28.9 16.0	29.7 16.5	30.6 17.0	31.5 17.5	32.4 17.9	33.2 18.4	34.1 18.9	35.0 19.4	61									
46	28.6 16.5	29.4 17.0	30.3 17.5	31.2 18.0	32.0 18.5	32.9 19.0	33.8 19.5	34.6 20.0	60									
47	28.3 17.0	29.1 17.5	30.0 18.0	30.9 18.5	31.7 19.1	32.6 19.6	33.4 20.1	34.3 20.6	59									
48	28.0 17.5	28.8 18.0	29.7 18.5	30.5 19.1	31.4 19.6	32.2 20.1	33.1 20.7	33.9 21.2	58									
49	27.7 18.0	28.5 18.5	29.4 19.1	30.2 19.6	31.0 20.2	31.9 20.7	32.7 21.2	33.5 21.8	57									
50	27.4 18.5	28.2 19.0	29.0 19.6	29.8 20.1	30.7 20.7	31.5 21.2	32.3 21.8	33.2 22.4	56									
51	27.0 18.9	27.9 19.5	28.7 20.1	29.5 20.6	30.3 21.2	31.1 21.8	31.9 22.4	32.8 22.9	55									
52	26.7 19.4	27.5 20.0	28.3 20.6	29.1 21.2	29.9 21.7	30.7 22.3	31.6 22.9	32.4 23.5	54									
53	26.4 19.9	27.2 20.5	28.0 21.1	28.8 21.7	29.5 22.3	30.3 22.9	31.1 23.5	31.9 24.1	53									
54	26.0 20.3	26.8 20.9	27.6 21.5	28.4 22.2	29.2 22.8	29.9 23.4	30.7 24.0	31.5 24.6	52									
55	25.6 20.8	26.4 21.4	27.2 22.0	28.0 22.7	28.8 23.3	29.5 23.9	30.3 24.5	31.1 25.2	51									
56	25.3 21.2	26.0 21.9	26.8 22.5	27.6 23.1	28.3 23.8	29.1 24.4	29.9 25.1	30.6 25.7	50									
57	24.9 21.6	25.7 22.3	26.4 23.0	27.2 23.6	27.9 24.3	28.7 24.9	29.4 25.6	30.2 26.2	49									
58	24.5 22.1	25.3 22.8	26.0 23.4	26.8 24.1	27.5 24.8	28.2 25.4	29.0 26.1	29.7 26.8	48									
59	24.1 22.5	24.9 23.2	25.6 23.9	26.3 24.6	27.1 25.2	27.8 25.9	28.5 26.6	29.3 27.3	47									
60	23.7 22.9	24.5 23.6	25.2 24.3	25.9 25.0	26.6 25.7	27.3 26.4	28.1 27.1	28.8 27.8	46									
61	23.3 23.3	24.0 24.0	24.7 24.7	25.5 25.5	26.2 26.2	26.9 26.9	27.6 27.6	28.3 28.3	45									
Crms.	Dep. | Diff. Lat.	Dep. | Diff. Lat.	Dep. | Diff. Lat.	Dep. | Diff. Lat.	Dep. | Diff. Lat.	Dep. | Diff. Lat.	Dep. | Diff. Lat.	Dep. | Diff. Lat.	Crms.									

Traverse Table.

(x.)

Distance. 41		42	43	44	45	46	47	48	Cms.
Cons.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	
1	41.0 02.0	41.9 02.1	42.9 02.1	43.9 02.2	44.9 02.2	45.9 02.3	46.9 02.3	47.9 02.4	79
2	40.8 04.0	41.8 04.1	42.8 04.2	43.8 04.3	44.8 04.4	45.8 04.5	46.8 04.6	47.8 04.7	78
3	40.6 06.0	41.5 06.2	42.5 06.3	43.5 06.5	44.5 06.6	45.5 06.7	46.5 06.9	47.5 07.0	77
4	40.2 08.0	41.2 08.2	42.2 08.4	43.2 08.6	44.1 08.8	45.1 09.0	46.1 09.2	47.1 09.4	76
5	39.8 10.0	40.7 10.2	41.7 10.4	42.7 10.7	43.7 10.9	44.6 11.2	45.6 11.4	46.6 11.7	75
6	39.2 11.9	40.2 12.2	41.2 12.5	42.1 12.8	43.1 13.1	44.0 13.3	45.0 13.6	45.9 13.9	74
7	38.6 13.8	39.5 14.1	40.5 14.5	41.4 14.8	42.4 15.2	43.3 15.5	44.3 15.8	45.2 16.2	73
8	37.9 15.7	38.8 16.1	39.7 16.5	40.6 16.8	41.6 17.2	42.5 17.6	43.4 18.0	44.4 18.4	72
9	37.1 17.5	38.0 18.0	38.9 18.4	39.8 18.8	40.7 19.2	41.6 19.7	42.5 20.1	43.4 20.5	71
10	36.2 19.3	37.0 19.8	37.9 20.3	38.8 20.7	39.7 21.2	40.6 21.7	41.5 22.2	42.3 22.6	70
11	35.2 21.1	36.0 21.6	36.9 22.1	37.7 22.6	38.6 23.1	39.5 23.6	40.3 24.2	41.2 24.7	69
12	34.1 22.8	34.9 23.3	35.8 23.9	36.6 24.4	37.4 25.0	38.2 25.6	39.1 26.1	39.9 26.7	68
13	32.9 24.4	33.7 25.0	34.5 25.6	35.3 26.2	36.1 26.8	36.9 27.4	37.7 28.0	38.6 28.6	67
14	31.7 26.0	32.5 26.6	33.2 27.3	34.0 27.9	34.8 28.5	35.6 29.2	36.3 29.8	37.1 30.4	66
15	30.4 27.5	31.1 28.2	31.9 28.9	32.6 29.5	33.3 30.2	34.1 30.9	34.8 31.6	35.6 32.2	65
16	29.0 29.0	29.7 29.7	30.4 30.4	31.1 31.1	31.8 31.8	32.5 32.5	33.2 33.2	33.9 33.9	64
17	41.0 00.7	42.0 00.7	43.0 00.8	44.0 00.8	45.0 00.8	46.0 00.8	47.0 00.8	48.0 00.8	89
18	41.0 01.4	42.0 01.5	43.0 01.5	44.0 01.5	45.0 01.6	46.0 01.6	47.0 01.6	48.0 01.7	88
19	40.9 02.1	41.9 02.2	42.9 02.3	43.9 02.3	44.9 02.4	45.9 02.4	46.9 02.5	47.9 02.5	87
20	40.9 02.9	41.9 02.9	42.9 03.0	43.9 03.1	44.9 03.1	45.9 03.2	46.9 03.3	47.9 03.3	86
21	40.8 03.6	41.8 03.7	42.8 03.7	43.8 03.8	44.8 03.9	45.8 04.0	46.8 04.1	47.8 04.2	85
22	40.8 04.3	41.8 04.4	42.8 04.5	43.8 04.6	44.8 04.7	45.7 04.8	46.7 04.9	47.7 05.0	84
23	40.7 05.0	41.7 05.1	42.7 05.2	43.7 05.4	44.7 05.5	45.7 05.6	46.6 05.7	47.6 05.8	83
24	40.6 05.7	41.6 05.8	42.6 06.0	43.6 06.1	44.6 06.3	45.6 06.4	46.5 06.5	47.5 06.7	82
25	40.5 06.4	41.5 06.6	42.5 06.7	43.5 06.9	44.4 07.0	45.4 07.2	46.4 07.4	47.4 07.5	81
26	40.4 07.1	41.4 07.3	42.3 07.5	43.3 07.6	44.3 07.8	45.3 08.0	46.3 08.2	47.3 08.3	80
27	40.2 07.8	41.2 08.0	42.2 08.2	43.2 08.4	44.2 08.6	45.2 08.8	46.1 09.0	47.1 09.2	79
28	40.1 08.5	41.1 08.7	42.1 08.9	43.0 09.1	44.0 09.4	45.0 09.6	46.0 09.8	47.0 10.0	78
29	39.9 09.2	40.9 09.4	41.9 09.7	42.9 09.9	43.8 10.1	44.8 10.3	45.8 10.6	46.8 10.8	77
30	39.8 09.9	40.8 10.2	41.7 10.4	42.7 10.6	43.7 10.9	44.6 11.1	45.6 11.4	46.6 11.6	76
31	39.6 10.6	40.6 10.9	41.5 11.1	42.5 11.4	43.5 11.6	44.4 11.9	45.4 12.2	46.4 12.4	75
32	39.4 11.3	40.4 11.6	41.3 11.9	42.3 12.1	43.3 12.4	44.2 12.7	45.2 13.0	46.1 13.2	74
33	39.2 12.0	40.2 12.3	41.1 12.6	42.1 12.9	43.0 13.2	44.0 13.4	44.9 13.7	45.9 14.0	73
34	39.0 12.7	39.9 13.0	40.9 13.3	41.8 13.6	42.8 13.9	43.7 14.2	44.7 14.5	45.7 14.8	72
35	38.8 13.3	39.7 13.7	40.7 14.0	41.6 14.3	42.5 14.7	43.5 15.0	44.4 15.3	45.4 15.6	71
36	38.5 14.0	39.5 14.4	40.4 14.7	41.3 15.0	42.3 15.4	43.2 15.7	44.2 16.1	45.1 16.4	70
37	38.3 14.7	39.2 15.1	40.1 15.4	41.1 15.8	42.0 16.1	42.9 16.5	43.9 16.8	44.8 17.2	69
38	38.0 15.4	38.9 15.7	39.9 16.1	40.8 16.5	41.7 16.9	42.7 17.2	43.6 17.6	44.5 18.0	68
39	37.7 16.0	38.7 16.4	39.6 16.8	40.5 17.2	41.4 17.6	42.3 18.0	43.3 18.4	44.2 18.8	67
40	37.5 16.7	38.4 17.1	39.3 17.5	40.2 17.9	41.1 18.3	42.0 18.7	42.9 19.1	43.9 19.5	66
41	37.2 17.3	38.1 17.7	39.0 18.2	39.9 18.6	40.8 19.0	41.7 19.4	42.6 19.9	43.5 20.3	65
42	36.9 18.0	37.7 18.4	38.6 18.8	39.5 19.3	40.4 19.7	41.3 20.2	42.2 20.6	43.1 21.0	64
43	36.5 18.6	37.4 19.1	38.3 19.5	39.2 20.0	40.1 20.4	41.0 20.9	41.9 21.3	42.8 21.8	63
44	36.2 19.2	37.1 19.7	38.0 20.2	38.8 20.7	39.7 21.1	40.6 21.6	41.5 22.1	42.4 22.5	62
45	35.9 19.9	36.7 20.4	37.6 20.8	38.5 21.3	39.4 21.8	40.2 22.3	41.1 22.8	42.0 23.3	61
46	35.5 20.5	36.4 21.0	37.2 21.5	38.1 22.0	39.0 22.5	39.8 23.0	40.7 23.5	41.6 24.0	60
47	35.1 21.1	36.0 21.6	36.9 22.1	37.7 22.7	38.6 23.2	39.4 23.7	40.3 24.2	41.1 24.7	59
48	34.8 21.7	35.6 22.3	36.5 22.8	37.3 23.3	38.2 23.8	39.0 24.4	39.9 24.9	40.7 25.4	58
49	34.4 22.3	35.2 22.9	36.1 23.4	36.9 24.0	37.7 24.5	38.6 25.1	39.4 25.6	40.3 26.1	57
50	34.0 22.9	34.8 23.5	35.6 24.0	36.5 24.6	37.3 25.2	38.1 25.7	39.0 26.3	39.8 26.8	56
51	33.6 23.5	34.4 24.1	35.2 24.7	36.0 25.2	36.9 25.8	37.7 26.4	38.5 27.0	39.3 27.5	55
52	33.2 24.1	34.0 24.7	34.8 25.3	35.6 25.9	36.4 26.5	37.2 27.0	38.0 27.6	38.8 28.2	54
53	32.7 24.7	33.5 25.3	34.3 25.9	35.1 26.5	35.9 27.1	36.7 27.7	37.5 28.3	38.3 28.9	53
54	32.3 25.2	33.1 25.9	33.9 26.5	34.7 27.1	35.5 27.7	36.2 28.3	37.0 28.9	37.8 29.6	52
55	31.9 25.8	32.6 26.4	33.4 27.1	34.2 27.7	35.0 28.3	35.7 28.9	36.5 29.6	37.3 30.2	51
56	31.4 26.4	32.2 27.0	32.9 27.6	33.7 28.3	34.5 28.9	35.2 29.6	36.0 30.2	36.8 30.9	50
57	30.9 26.9	31.7 27.6	32.5 28.2	33.2 28.9	34.0 29.5	34.7 30.2	35.5 30.8	36.2 31.5	49
58	30.5 27.4	31.2 28.1	32.0 28.8	32.7 29.4	33.4 30.1	34.2 30.8	34.9 31.4	35.7 32.1	48
59	30.0 28.0	30.7 28.6	31.4 29.3	32.2 30.0	32.9 30.7	33.6 31.4	34.4 32.1	35.1 32.7	47
60	29.5 28.5	30.2 29.2	30.9 29.9	31.7 30.6	32.4 31.3	33.1 32.0	33.8 32.6	34.5 33.3	46
61	29.0 29.0	29.7 29.7	30.4 30.4	31.1 31.1	31.8 31.8	32.5 32.5	33.2 33.2	33.9 33.9	45
62	29.0 29.0	29.7 29.7	30.4 30.4	31.1 31.1	31.8 31.8	32.5 32.5	33.2 33.2	33.9 33.9	45
63	29.0 29.0	29.7 29.7	30.4 30.4	31.1 31.1	31.8 31.8	32.5 32.5	33.2 33.2	33.9 33.9	45
64	29.0 29.0	29.7 29.7	30.4 30.4	31.1 31.1	31.8 31.8	32.5 32.5	33.2 33.2	33.9 33.9	45
65	29.0 29.0	29.7 29.7	30.4 30.4	31.1 31.1	31.8 31.8	32.5 32.5	33.2 33.2	33.9 33.9	45
66	29.0 29.0	29.7 29.7	30.4 30.4	31.1 31.1	31.8 31.8	32.5 32.5	33.2 33.2	33.9 33.9	45
67	29.0 29.0	29.7 29.7	30.4 30.4	31.1 31.1	31.8 31.8	32.5 32.5	33.2 33.2	33.9 33.9	45
68	29.0 29.0	29.7 29.7	30.4 30.4	31.1 31.1	31.8 31.8	32.5 32.5	33.2 33.2	33.9 33.9	45
69	29.0 29.0	29.7 29.7	30.4 30.4	31.1 31.1	31.8 31.8	32.5 32.5	33.2 33.2	33.9 33.9	45
70	29.0 29.0	29.7 29.7	30.4 30.4	31.1 31.1	31.8 31.8	32.5 32.5	33.2 33.2	33.9 33.9	45
71	29.0 29.0	29.7 29.7	30.4 30.4	31.1 31.1	31.8 31.8	32.5 32.5	33.2 33.2	33.9 33.9	45
72	29.0 29.0	29.7 29.7	30.4 30.4	31.1 31.1	31.8 31.8	32.5 32.5	33.2 33.2	33.9 33.9	45
73	29.0 29.0	29.7 29.7	30.4 30.4	31.1 31.1	31.8 31.8	32.5 32.5	33.2 33.2	33.9 33.9	45
74	29.0 29.0	29.7 29.7	30.4 30.4	31.1 31.1	31.8 31.8	32.5 32.5	33.2 33.2	33.9 33.9	45
75	29.0 29.0	29.7 29.7	30.4 30.4	31.1 31.1	31.8 31.8	32.5 32.5	33.2 33.2	33.9 33.9	45
76	29.0 29.0	29.7 29.7	30.4 30.4	31.1 31.1	31.8 31.8	32.5 32.5	33.2 33.2	33.9 33.9	45
77	29.0 29.0	29.7 29.7	30.4 30.4	31.1 31.1	31.8 31.8	32.5 32.5	33.2 33.2	33.9 33.9	45
78	29.0 29.0	29.7 29.7	30.4 30.4	31.1 31.1	31.8 31.8	32.5 32.5	33.2 33.2	33.9 33.9	45
79	29.0 29.0	29.7 29.7	30.4 30.4	31.1 31.1	31.8 31.8	32.5 32.5	33.2 33.2	33.9 33.9	45
80	29.0 29.0	29.7 29.7	30.4 30.4	31.1 31.1	31.8 31.8	32.5 32.5	33.2 33.2	33.9 33.9	45
81	29.0 29.0	29.7 29.7	30.4 30.4	31.1 31.1	31.8 31.8	32.5 32.5	33.2 33.2	33.9 33.9	45
82	29.0 29.0	29.7 29.7	30.4 30.4	31.1 31.1	31.8 31.8	32.5 32.5	33.2 33.2	33.9 33.9	45
83	29.0 29.0	29.7 29.7	30.4 30.4	31.1 31.1	31.8 31.8	32.5 32.5	33.2 33.2	33.9 33.9	45
84	29.0 29.0	29.7 29.7	30.4 30.4	31.1 31.1	31.8 31.8	32.5 32.5	33.2 33.2	33.9 33.9	45
85	29.0 29.0	29.7 29.7	30.4 30.4	31.1 31.1	31.8 31.8	32.5 32.5	33.2 33.2	33.9 33.9	45
86	29.0 29.0	29.7 29.7	30.4 30.4	31.1 31.1	31.8 31.8	32.5 32.5	33.2 33.2	33.9 33.9	45
87	29.0 29.0	29.7 29.7	30.4 30.4	31.1 31.1	31.8 31.8	32.5 32.5	33.2 33.2	33.9 33.9	45
88	29.0 29.0	29.7 29.7	30.4 30.4	31.1 31.1	31.8 31.8	32.5 32.5	33.2 33.2	33.9 33.9	45
89	29.0 29.0	29.7 29.7	30.4 30.4	31.1 31.1	31.8 31.8	32.5 32.5	33.2 33.2	33.9 33.9	45
90	29.0 29.0	29.7 29.7	30.4 30.4	31.1 31.1	31.8 31.8	32.5 32.5	33.2 33.2	33.9 33.9	45
91	29.0 29.0	29.7 29.7	30.4 30.4	31.1 31.1	31.8 31.8	32.5 32.5	33.2 33.2	33.9 33.9	45
92	29.0 29.0	29.7 29.7	30.4 30.4	31.1 31.1	31.8 31.8	32.5 32.5	33.2 33.2	33.9 33.9	45
93	29.0 29.0	29.7 29.7	30.4 30.4	31.1 31.1	31.8 31.8	32.5 32.5	33.		

Transverse Table.

(x.)

Distance 49			50			51			52			53			54			55			56			Cross.
Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	
48.9	02.4		49.9	02.5		50.9	02.5		51.9	02.6		52.9	02.6		53.9	02.7		54.9	02.7		55.9	02.8		73
48.8	04.8		49.8	04.9		50.8	05.0		51.7	05.1		52.7	05.2		53.7	05.3		54.7	05.4		55.7	05.5		74
48.5	07.2		49.5	07.3		50.4	07.5		51.4	07.6		52.4	07.8		53.4	07.9		54.4	08.1		55.4	08.2		75
48.1	09.6		49.0	09.8		50.0	10.0		51.0	10.1		52.0	10.3		53.0	10.5		53.9	10.7		54.9	10.9		76
47.5	11.9		48.5	12.2		49.5	12.4		50.4	12.6		51.4	12.9		52.4	13.1		53.4	13.4		54.3	13.6		77
46.9	14.2		47.9	14.5		48.8	14.8		49.8	15.1		50.7	15.4		51.7	15.7		52.6	16.0		53.6	16.3		78
46.1	16.5		47.1	16.8		48.0	17.2		49.0	17.5		49.9	17.9		50.8	18.2		51.8	18.5		52.7	18.9		79
45.3	18.8		46.2	19.1		47.1	19.5		48.0	19.9		49.0	20.3		49.9	20.7		50.8	21.0		51.7	21.4		80
44.3	21.0		45.2	21.4		46.1	21.8		47.0	22.2		47.9	22.7		48.8	23.1		49.7	23.5		50.6	23.9		81
43.2	23.1		44.1	23.6		45.0	24.0		45.9	24.5		46.7	25.0		47.6	25.5		48.5	25.9		49.4	26.4		82
42.0	25.2		42.9	25.7		43.7	26.2		44.6	26.7		45.5	27.2		46.3	27.8		47.2	28.3		48.0	28.8		83
40.7	27.2		41.6	27.8		42.4	28.3		43.2	28.9		44.1	29.4		44.9	30.0		45.7	30.6		46.6	31.1		84
39.4	29.2		40.2	29.8		41.0	30.4		41.8	31.0		42.6	31.6		43.4	32.2		44.2	32.8		45.0	33.4		85
37.9	31.1		38.6	31.7		39.4	32.3		40.2	33.0		41.0	33.6		41.7	34.3		42.5	34.9		43.3	35.5		86
36.3	32.9		37.0	33.6		37.8	34.2		38.5	34.9		39.3	35.6		40.0	36.3		40.7	36.9		41.5	37.6		87
34.6	34.6		35.4	35.4		36.1	36.1		36.8	36.8		37.5	37.5		38.2	38.2		38.9	38.9		39.6	39.6		88
49.0	00.9		50.0	00.9		51.0	00.9		52.0	00.9		53.0	00.9		54.0	00.9		55.0	01.0		56.0	01.0		89
49.0	01.7		50.0	01.7		51.0	01.8		52.0	01.8		53.0	01.8		54.0	01.9		55.0	01.9		56.0	02.0		90
48.9	02.6		49.9	02.6		50.9	02.7		51.9	02.7		52.9	02.8		53.9	02.8		54.9	02.9		55.9	02.9		91
48.9	03.4		49.9	03.5		50.9	03.6		51.9	03.6		52.9	03.7		53.9	03.8		54.9	03.8		55.9	03.9		92
48.8	04.3		49.8	04.4		50.8	04.4		51.8	04.5		52.8	04.6		53.8	04.7		54.8	04.8		55.8	04.9		93
48.7	05.1		49.7	05.2		50.7	05.3		51.7	05.4		52.7	05.5		53.7	05.6		54.7	05.7		55.7	05.9		94
48.6	06.0		49.6	06.1		50.6	06.2		51.6	06.3		52.6	06.5		53.6	06.6		54.6	06.7		55.6	06.8		95
48.5	06.8		49.5	07.0		50.5	07.1		51.5	07.2		52.5	07.4		53.5	07.5		54.5	07.7		55.5	07.8		96
48.4	07.7		49.4	07.8		50.4	08.0		51.4	08.1		52.3	08.3		53.3	08.4		54.3	08.6		55.3	08.8		97
48.3	08.5		49.2	08.7		50.2	08.9		51.2	09.0		52.0	09.2		53.2	09.4		54.2	09.6		55.1	09.7		98
48.1	09.3		49.1	09.5		50.1	09.7		51.0	09.9		52.0	10.1		53.0	10.3		54.0	10.5		55.0	10.7		99
47.9	10.2		48.9	10.4		49.9	10.6		50.9	10.8		51.8	11.0		52.8	11.2		53.8	11.4		54.8	11.6		100
47.7	11.0		48.7	11.2		49.7	11.5		50.7	11.7		51.6	11.9		52.6	12.1		53.6	12.4		54.6	12.6		101
47.5	11.9		48.5	12.1		49.5	12.3		50.5	12.6		51.4	12.8		52.4	13.1		53.4	13.3		54.3	13.5		102
47.3	12.7		48.3	12.9		49.3	13.2		50.2	13.5		51.2	13.7		52.2	14.0		53.1	14.2		54.1	14.5		103
47.1	13.5		48.1	13.8		49.0	14.1		50.0	14.3		50.9	14.6		51.9	14.9		52.9	15.2		53.8	15.4		104
46.9	14.3		47.8	14.6		48.8	14.9		49.7	15.2		50.7	15.5		51.6	15.8		52.6	16.1		53.6	16.4		105
46.6	15.1		47.6	15.5		48.5	15.8		49.5	16.1		50.4	16.4		51.4	16.7		52.3	17.0		53.3	17.3		106
46.3	16.0		47.3	16.3		48.2	16.6		49.2	16.9		50.1	17.3		51.1	17.6		52.0	17.9		52.9	18.2		107
46.0	16.8		47.0	17.1		47.9	17.4		48.9	17.8		49.8	18.1		50.7	18.5		51.7	18.8		52.6	19.2		108
45.7	17.6		46.7	17.9		47.6	18.3		48.5	18.6		49.5	19.0		50.4	19.4		51.3	19.7		52.3	20.1		109
45.4	18.4		46.4	18.7		47.3	19.1		48.2	19.5		49.1	19.9		50.1	20.2		51.0	20.6		51.9	21.0		110
45.1	19.1		46.0	19.5		46.9	19.9		47.9	20.3		48.8	20.7		49.7	21.1		50.6	21.5		51.5	21.9		111
44.8	19.9		45.7	20.3		46.6	20.7		47.5	21.2		48.4	21.6		49.3	22.0		50.2	22.4		51.2	22.8		112
44.4	20.7		45.3	21.1		46.2	21.6		47.1	22.0		48.0	22.4		48.9	22.8		49.8	23.2		50.8	23.7		113
44.0	21.5		44.9	21.9		45.8	22.4		46.7	22.8		47.6	23.2		48.5	23.7		49.4	24.1		50.3	24.5		114
43.7	22.2		44.6	22.7		45.4	23.2		46.3	23.6		47.2	24.1		48.1	24.5		49.0	25.0		49.9	25.4		115
43.3	23.0		44.1	23.5		45.0	23.9		45.9	24.4		46.8	24.9		47.7	25.4		48.6	25.8		49.4	26.3		116
42.9	23.8		43.7	24.2		44.6	24.7		45.5	25.2		46.4	25.7		47.2	26.2		48.1	26.7		49.0	27.1		117
42.4	24.5		43.3	25.0		44.2	25.5		45.0	26.0		45.9	26.5		46.8	27.0		47.6	27.5		48.5	28.0		118
42.0	25.2		42.9	25.8		43.7	26.3		44.6	26.8		45.4	27.3		46.3	27.8		47.1	28.3		48.0	28.8		119
41.6	26.0		42.4	26.5		43.3	27.0		44.1	27.6		44.9	28.1		45.8	28.6		46.6	29.1		47.5	29.7		120
41.1	26.7		41.9	27.2		42.8	27.8		43.6	28.3		44.4	28.9		45.3	29.4		46.1	30.0		47.0	30.5		121
40.6	27.4		41.5	28.0		42.3	28.5		43.1	29.1		43.9	29.6		44.8	30.2		45.6	30.8		46.4	31.3		122
40.1	28.1		41.0	28.7		41.8	29.3		42.6	29.8		43.4	30.4		44.2	31.0		45.1	31.5		45.9	32.1		123
39.6	28.8		40.5	29.4		41.3	30.0		42.1	30.6		42.9	31.2		43.7	31.7		44.5	32.3		45.3	32.9		124
39.1	29.5		39.9	30.1		40.7	30.7		41.5	31.3		42.3	31.9		43.1	32.5		43.9	33.1		44.7	33.7		125
38.6	30.2		39.4	30.8		40.2	31.4		41.0	32.0		41.8	32.6		42.6	33.2		43.3	33.9		44.1	34.5		126
38.1	30.8		38.9	31.5		39.6	32.1		40.4	32.7		41.2	33.4		42.0	34.0		42.7	34.6		43.5	35.2		127
37.5	31.5		38.3	32.1		39.1	32.8		39.8	33.4		40.6	34.1		41.4	34.7		42.1	35.4		42.9	36.0		128
37.0	32.1		37.7	32.8		38.5	33.5		39.2	34.1		40.0	34.8		40.8	35.4		41.5	36.1		42.3	36.7		129
36.4	32.8		37.2	33.5		37.9	34.1		38.6	34.8		39.4	35.5		40.1	36.1		40.9	36.8		41.6	37.5		130
35.8	33.4		36.6	34.1		37.3	34.8		38.0	35.5		38.8	36.1		39.5	36.8		40.2	37.5		41.0	38.2		131
35.2	34.0		36.0	34.7		36.7	35.4		37.4	36.1		38.1	36.8		38.8	37.5		39.6	38.2		40.3	38.9		132
34.6	34.6		35.4	35.4		36.1	36.1		36.8	36.8		37.5	37.5		38.2	38.2		38.9	38.9		39.6	39.6		133
Dep.	Diff. Lat.		Dep.	Diff. Lat.		Dep.	Diff. Lat.		Dep.	Diff. Lat.		Dep.	Diff. Lat.		Dep.	Diff. Lat.		Dep.	Diff. Lat.		Dep.	Diff. Lat.		134

Traverse Table.

(3.)

Distances		57	58	59	60	61	62	63	64
Course	Dist. Lat. | Dep.	Dist. Lat. | Dep.	Dist. Lat. | Dep.	Dist. Lat. | Dep.	Dist. Lat. | Dep.	Dist. Lat. | Dep.	Dist. Lat. | Dep.	Dist. Lat. | Dep.	Dist. Lat. | Dep.
1	56 9 02 8	57 9 02 9	58 9 02 9	59 9 02 9	60 9 03 0	61 9 03 0	62 9 03 1	63 9 03 1	64 9 03 1
2	56 7 05 6	57 7 05 7	58 7 05 8	59 7 05 9	60 7 06 0	61 7 06 1	62 7 06 2	63 7 06 3	64 7 06 3
3	56 4 04 4	57 4 04 5	58 4 04 6	59 4 04 7	60 4 04 8	61 4 04 9	62 4 05 0	63 4 05 1	64 4 05 1
4	55 9 11 1	56 9 11 3	57 9 11 5	58 9 11 7	59 9 11 9	60 9 12 1	61 9 12 3	62 9 12 5	63 9 12 7
5	55 3 13 9	56 3 14 1	57 3 14 3	58 3 14 6	59 3 14 8	60 3 15 1	61 3 15 3	62 3 15 6	63 3 15 8
6	54 5 16 5	55 5 16 8	56 5 17 1	57 5 17 4	58 5 17 7	59 5 18 0	60 5 18 3	61 5 18 6	62 5 18 9
7	53 7 19 2	54 7 19 5	55 7 19 8	56 7 20 2	57 7 20 5	58 7 20 9	59 7 21 2	60 7 21 6	61 7 21 9
8	52 7 21 8	53 7 22 2	54 7 22 6	55 7 23 0	56 7 23 3	57 7 23 7	58 7 24 1	59 7 24 5	60 7 24 9
9	51 6 24 4	52 6 24 8	53 6 25 2	54 6 25 7	55 6 26 1	56 6 26 5	57 6 26 9	58 6 27 3	59 6 27 7
10	50 3 26 9	51 3 27 3	52 3 27 8	53 3 28 3	54 3 28 8	55 3 29 2	56 3 29 7	57 3 30 1	58 3 30 6
11	48 9 29 3	49 9 29 8	50 9 30 3	51 9 30 8	52 9 31 4	53 9 31 9	54 9 32 4	55 9 32 9	56 9 33 4
12	47 4 31 7	48 4 32 2	49 4 32 7	50 4 33 3	51 4 33 8	52 4 34 3	53 4 34 8	54 4 35 3	55 4 35 8
13	45 8 34 0	46 8 34 6	47 8 35 1	48 8 35 7	49 8 36 3	50 8 36 9	51 8 37 5	52 8 38 1	53 8 38 7
14	44 1 36 2	45 1 36 9	46 1 37 4	47 1 38 1	48 1 38 7	49 1 39 3	50 1 40 0	51 1 40 6	52 1 41 2
15	42 2 38 3	43 2 38 9	44 2 39 6	45 2 40 3	46 2 41 0	47 2 41 6	48 2 42 3	49 2 43 0	50 2 43 6
16	40 3 40 3	41 3 41 0	42 3 41 7	43 3 42 4	44 3 43 1	45 3 43 8	46 3 44 5	47 3 45 2	48 3 45 9
17	37 0 01 0	38 0 01 0	39 0 01 0	40 0 01 0	41 0 01 0	42 0 01 1	43 0 01 1	44 0 01 1	45 0 01 1
18	37 0 02 0	38 0 02 0	39 0 02 1	40 0 02 1	41 0 02 1	42 0 02 2	43 0 02 2	44 0 02 2	45 0 02 2
19	36 9 03 0	37 9 03 0	38 9 03 1	39 9 03 1	40 9 03 2	41 9 03 2	42 9 03 3	43 9 03 3	44 9 03 3
20	36 9 04 0	37 9 04 0	38 9 04 1	39 9 04 2	40 9 04 3	41 9 04 3	42 9 04 4	43 9 04 4	44 9 04 5
21	36 8 05 0	37 8 05 1	38 8 05 1	39 8 05 2	40 8 05 3	41 8 05 4	42 8 05 5	43 8 05 6	44 8 05 6
22	36 7 06 0	37 7 06 1	38 7 06 2	39 7 06 3	40 7 06 4	41 7 06 5	42 7 06 6	43 7 06 7	44 7 06 7
23	36 6 06 9	37 6 07 1	38 6 07 2	39 6 07 3	40 6 07 4	41 6 07 5	42 6 07 6	43 6 07 7	44 6 07 8
24	36 4 07 9	37 4 08 1	38 4 08 2	39 4 08 4	40 4 08 5	41 4 08 6	42 4 08 8	43 4 08 9	44 4 09 0
25	36 3 08 9	37 3 09 1	38 3 09 2	39 3 09 4	40 3 09 5	41 3 09 7	42 3 09 9	43 3 10 0	44 3 10 1
26	36 1 09 1	37 1 10 1	38 1 10 2	39 1 10 4	40 1 10 6	41 1 10 8	42 1 10 9	43 1 11 1	44 1 11 2
27	35 0 10 9	36 0 11 1	37 0 11 3	38 0 11 4	39 0 11 6	40 0 11 8	41 0 12 0	42 0 12 2	43 0 12 3
28	35 8 11 9	36 8 12 1	37 8 12 3	38 8 12 5	39 8 12 7	40 8 12 9	41 8 13 1	42 8 13 3	43 8 13 5
29	35 5 12 8	36 5 13 0	37 5 13 3	38 5 13 5	39 5 13 7	40 5 13 9	41 5 14 2	42 5 14 4	43 5 14 6
30	35 3 13 8	36 3 14 0	37 3 14 3	38 3 14 5	39 3 14 8	40 3 15 0	41 3 15 2	42 3 15 5	43 3 15 7
31	35 1 14 8	36 1 15 0	37 1 15 3	38 1 15 5	39 1 15 8	40 1 16 0	41 1 16 3	42 1 16 6	43 1 16 8
32	34 8 15 7	35 8 16 0	36 8 16 3	37 8 16 5	38 8 16 8	39 8 17 1	40 8 17 4	41 8 17 6	42 8 17 9
33	34 5 16 7	35 5 17 0	36 5 17 2	37 5 17 5	38 5 17 8	39 5 18 1	40 5 18 4	41 5 18 7	42 5 18 9
34	34 2 17 6	35 2 17 9	36 2 18 2	37 2 18 5	38 2 18 8	39 2 19 1	40 2 19 4	41 2 19 7	42 2 19 9
35	33 9 18 6	34 9 18 9	35 9 19 2	36 9 19 5	37 9 19 8	38 9 20 1	39 9 20 4	40 9 20 7	41 9 21 0
36	33 6 19 5	34 6 19 8	35 6 20 1	36 6 20 4	37 6 20 7	38 6 21 0	39 6 21 3	40 6 21 6	41 6 21 9
37	33 3 20 4	34 3 20 8	35 3 21 1	36 3 21 5	37 3 21 9	38 3 22 2	39 3 22 6	40 3 22 9	41 3 23 2
38	32 8 21 4	33 8 21 7	34 8 22 1	35 8 22 5	36 8 22 9	37 8 23 2	38 8 23 6	39 8 23 9	40 8 24 3
39	32 5 22 3	33 5 22 7	34 5 23 1	35 5 23 4	36 5 23 8	37 5 24 2	38 5 24 6	39 5 24 9	40 5 25 3
40	32 1 23 2	33 1 23 6	34 1 24 0	35 1 24 4	36 1 24 8	37 1 25 2	38 1 25 6	39 1 25 9	40 1 26 3
41	31 7 24 1	32 7 24 5	33 7 24 9	34 7 25 3	35 7 25 7	36 7 26 1	37 7 26 5	38 7 26 9	39 7 27 3
42	31 2 25 0	32 2 25 4	33 2 25 8	34 2 26 2	35 2 26 6	36 2 27 0	37 2 27 4	38 2 27 8	39 2 28 2
43	30 8 25 9	31 8 26 3	32 8 26 7	33 8 27 1	34 8 27 5	35 8 27 9	36 8 28 3	37 8 28 7	38 8 29 1
44	30 3 26 8	31 3 27 2	32 3 27 6	33 3 28 0	34 3 28 4	35 3 28 8	36 3 29 2	37 3 29 6	38 3 29 9
45	29 9 27 6	30 9 28 0	31 9 28 4	32 9 28 8	33 9 29 2	34 9 29 6	35 9 30 0	36 9 30 4	37 9 30 8
46	29 4 28 5	30 4 28 9	31 4 29 3	32 4 29 7	33 4 30 1	34 4 30 5	35 4 30 9	36 4 31 3	37 4 31 7
47	28 9 29 4	29 9 29 8	30 9 30 2	31 9 30 6	32 9 31 0	33 9 31 4	34 9 31 8	35 9 32 2	36 9 32 6
48	28 4 30 2	29 4 30 6	30 4 31 0	31 4 31 4	32 4 31 8	33 4 32 2	34 4 32 6	35 4 33 0	36 4 33 4
49	27 8 31 0	28 8 31 4	29 8 31 8	30 8 32 2	31 8 32 6	32 8 33 0	33 8 33 4	34 8 33 8	35 8 34 2
50	27 3 31 9	28 3 32 3	29 3 32 7	30 3 33 1	31 3 33 5	32 3 33 9	33 3 34 3	34 3 34 7	35 3 35 1
51	26 7 32 7	27 7 33 1	28 7 33 5	29 7 33 9	30 7 34 3	31 7 34 7	32 7 35 1	33 7 35 5	34 7 35 9
52	26 1 33 5	27 1 33 9	28 1 34 3	29 1 34 7	30 1 35 1	31 1 35 5	32 1 35 9	33 1 36 3	34 1 36 7
53	25 5 34 3	26 5 34 7	27 5 35 1	28 5 35 5	29 5 35 9	30 5 36 3	31 5 36 7	32 5 37 1	33 5 37 5
54	24 9 35 1	25 9 35 5	26 9 35 9	27 9 36 3	28 9 36 7	29 9 37 1	30 9 37 5	31 9 37 9	32 9 38 3
55	24 3 35 9	25 3 36 3	26 3 36 7	27 3 37 1	28 3 37 5	29 3 37 9	30 3 38 3	31 3 38 7	32 3 39 1
56	23 7 36 6	24 7 37 0	25 7 37 4	26 7 37 8	27 7 38 2	28 7 38 6	29 7 39 0	30 7 39 4	31 7 39 8
57	23 0 37 4	24 0 37 8	25 0 38 2	26 0 38 6	27 0 39 0	28 0 39 4	29 0 39 8	30 0 40 2	31 0 40 6
58	22 4 38 1	23 4 38 5	24 4 38 9	25 4 39 3	26 4 39 7	27 4 40 1	28 4 40 5	29 4 40 9	30 4 41 3
59	21 7 38 9	22 7 39 3	23 7 39 7	24 7 40 1	25 7 40 5	26 7 40 9	27 7 41 3	28 7 41 7	29 7 42 1
60	21 0 39 6	22 0 40 0	23 0 40 4	24 0 40 8	25 0 41 2	26 0 41 6	27 0 42 0	28 0 42 4	29 0 42 8
61	20 3 40 3	21 3 40 7	22 3 41 1	23 3 41 5	24 3 41 9	25 3 42 3	26 3 42 7	27 3 43 1	28 3 43 5
62	19 6 40 3	20 6 40 7	21 6 41 1	22 6 41 5	23 6 41 9	24 6 42 3	25 6 42 7	26 6 43 1	27 6 43 5
63	18 9 40 3	19 9 40 7	20 9 41 1	21 9 41 5	22 9 41 9	23 9 42 3	24 9 42 7	25 9 43 1	26 9 43 5
64	18 2 40 3	19 2 40 7	20 2 41 1	21 2 41 5	22 2 41 9	23 2 42 3	24 2 42 7	25 2 43 1	26 2 43 5
65	17 5 40 3	18 5 40 7	19 5 41 1	20 5 41 5	21 5 41 9	22 5 42 3	23 5 42 7	24 5 43 1	25 5 43 5
66	16 8 40 3	17 8 40 7	18 8 41 1	19 8 41 5	20 8 41 9	21 8 42 3	22 8 42 7	23 8 43 1	24 8 43 5
67	16 1 40 3	17 1 40 7	18 1 41 1	19 1 41 5	20 1 41 9	21 1 42 3	22 1 42 7	23 1 43 1	24 1 43 5
68	15 4 40 3	16 4 40 7	17 4 41 1	18 4 41 5	19 4 41 9	20 4 42 3	21 4 42 7	22 4 43 1	23 4 43 5
69	14 7 40 3	15 7 40 7	16 7 41 1	17 7 41 5	18 7 41 9	19 7 42 3	20 7 42 7	21 7 43 1	22 7 43 5
70	14 0 40 3	15 0 40 7	16 0 41 1	17 0 41 5	18 0 41 9	19 0 42 3	20 0 42 7	21 0 43 1	22 0 43 5

Traverse Table.

(1.)

Distance. 65		66		67		68		69		70		71		72		Course
Dist.	Lat. | Dep.	Dist.	Lat. | Dep.	Dist.	Lat. | Dep.	Dist.	Lat. | Dep.	Dist.	Lat. | Dep.	Dist.	Lat. | Dep.	Dist.	Lat. | Dep.	Dist.	Lat. | Dep.	
1	61.9 03.2	65.9 03.2	66.9 03.3	67.9 03.3	68.9 03.4	69.9 03.4	70.9 03.5	71.9 03.5	72.9 03.5	73.9 03.5	74.9 03.5	75.9 03.5	76.9 03.5	77.9 03.5	78.9 03.5	79.9 03.5
2	64.7 06.4	65.7 06.5	66.7 06.6	67.7 06.7	68.7 06.8	69.7 06.9	70.7 07.0	71.7 07.1	72.7 07.1	73.7 07.1	74.7 07.1	75.7 07.1	76.7 07.1	77.7 07.1	78.7 07.1	79.7 07.1
3	64.3 09.5	65.3 09.7	66.3 09.8	67.3 10.0	68.3 10.1	69.3 10.3	70.3 10.4	71.3 10.5	72.3 10.5	73.3 10.5	74.3 10.5	75.3 10.5	76.3 10.5	77.3 10.5	78.3 10.5	79.3 10.5
4	63.7 12.7	64.7 12.9	65.7 13.1	66.7 13.3	67.7 13.5	68.7 13.7	69.7 13.9	70.7 14.0	71.7 14.0	72.7 14.0	73.7 14.0	74.7 14.0	75.7 14.0	76.7 14.0	77.7 14.0	78.7 14.0
5	63.1 15.8	64.0 16.0	65.0 16.3	66.0 16.5	66.9 16.8	67.9 17.0	68.9 17.3	69.8 17.5	70.8 17.5	71.8 17.5	72.8 17.5	73.8 17.5	74.8 17.5	75.8 17.5	76.8 17.5	77.8 17.5
6	62.2 18.9	63.2 19.2	64.1 19.4	65.1 19.7	66.0 20.0	67.0 20.3	67.9 20.6	68.9 20.9	69.8 21.2	70.8 21.5	71.8 21.8	72.8 22.1	73.8 22.4	74.8 22.7	75.8 23.0	76.8 23.3
7	61.2 21.9	62.1 22.2	63.1 22.6	64.0 22.9	65.0 23.2	65.9 23.6	66.8 23.9	67.8 24.2	68.7 24.5	69.7 24.8	70.7 25.1	71.7 25.4	72.7 25.7	73.7 26.0	74.7 26.3	75.7 26.6
8	60.1 24.9	61.0 25.3	61.9 25.6	62.8 26.0	63.8 26.4	64.7 26.8	65.6 27.2	66.5 27.6	67.5 27.9	68.4 28.3	69.3 28.6	70.3 28.9	71.3 29.2	72.3 29.5	73.3 29.8	74.3 30.1
9	58.8 27.8	59.7 28.2	60.6 28.6	61.5 29.1	62.4 29.5	63.3 29.9	64.2 30.4	65.1 30.8	66.0 31.2	66.9 31.6	67.8 32.0	68.7 32.4	69.6 32.8	70.5 33.2	71.4 33.6	72.3 34.0
10	57.3 30.6	58.2 31.1	59.1 31.6	60.0 32.1	60.9 32.5	61.7 33.0	62.6 33.5	63.5 33.9	64.4 34.4	65.3 34.8	66.2 35.2	67.1 35.6	68.0 36.0	68.9 36.4	69.8 36.8	70.7 37.2
11	55.8 33.4	56.6 33.9	57.5 34.4	58.3 35.0	59.2 35.5	60.0 36.0	60.9 36.5	61.8 36.9	62.7 37.4	63.6 37.8	64.5 38.3	65.4 38.7	66.3 39.1	67.2 39.5	68.1 39.9	69.0 40.3
12	54.0 36.1	54.9 36.7	55.7 37.2	56.5 37.8	57.4 38.3	58.2 38.9	59.0 39.4	59.9 39.8	60.8 40.3	61.7 40.7	62.6 41.2	63.5 41.6	64.4 42.1	65.3 42.5	66.2 42.9	67.1 43.3
13	52.2 38.7	53.0 39.3	53.8 39.9	54.6 40.5	55.4 41.1	56.2 41.7	57.0 42.3	57.8 42.9	58.7 43.3	59.5 43.8	60.4 44.3	61.3 44.7	62.2 45.2	63.1 45.6	64.0 46.0	64.9 46.4
14	50.9 41.2	51.0 41.9	51.8 42.5	52.6 43.1	53.3 43.8	54.1 44.4	54.9 45.0	55.7 45.7	56.5 46.3	57.3 46.9	58.1 47.5	58.9 48.1	59.7 48.7	60.5 49.3	61.3 49.9	62.1 50.5
15	48.2 43.6	48.9 44.3	49.6 45.0	50.4 45.7	51.1 46.3	51.9 47.0	52.6 47.7	53.3 48.3	54.0 49.0	54.8 49.6	55.5 50.3	56.3 50.9	57.0 51.5	57.8 52.1	58.5 52.7	59.3 53.3
16	46.0 46.0	46.7 46.7	47.4 47.4	48.1 48.1	48.8 48.8	49.5 49.5	50.2 50.2	50.9 50.9	51.6 51.6	52.3 52.3	53.0 53.0	53.7 53.7	54.4 54.4	55.1 55.1	55.8 55.8	56.5 56.5
17	65.0 01.1	66.0 01.2	67.0 01.2	68.0 01.2	69.0 01.2	70.0 01.2	71.0 01.2	72.0 01.3	73.0 01.3	74.0 01.3	75.0 01.3	76.0 01.3	77.0 01.3	78.0 01.3	79.0 01.3	80.0 01.3
18	65.0 02.3	66.0 02.3	67.0 02.3	68.0 02.4	69.0 02.4	70.0 02.4	71.0 02.5	72.0 02.5	73.0 02.5	74.0 02.5	75.0 02.5	76.0 02.5	77.0 02.5	78.0 02.5	79.0 02.5	80.0 02.5
19	64.9 03.4	65.9 03.5	66.9 03.5	67.9 03.6	68.9 03.6	69.9 03.7	70.9 03.7	71.9 03.8	72.9 03.8	73.9 03.8	74.9 03.8	75.9 03.8	76.9 03.8	77.9 03.8	78.9 03.8	79.9 03.8
20	64.8 04.5	65.8 04.6	66.8 04.7	67.8 04.7	68.8 04.8	69.8 04.9	70.8 05.0	71.8 05.0	72.8 05.0	73.8 05.0	74.8 05.0	75.8 05.0	76.8 05.0	77.8 05.0	78.8 05.0	79.8 05.0
21	64.8 05.7	65.7 05.8	66.7 05.8	67.7 05.9	68.7 06.0	69.7 06.1	70.7 06.2	71.7 06.2	72.7 06.2	73.7 06.2	74.7 06.2	75.7 06.2	76.7 06.2	77.7 06.2	78.7 06.2	79.7 06.2
22	64.6 06.8	65.6 06.9	66.6 07.0	67.6 07.1	68.6 07.2	69.6 07.3	70.6 07.4	71.6 07.4	72.6 07.4	73.6 07.4	74.6 07.4	75.6 07.4	76.6 07.4	77.6 07.4	78.6 07.4	79.6 07.4
23	64.5 07.9	65.5 08.0	66.5 08.2	67.5 08.3	68.5 08.4	69.5 08.5	70.5 08.6	71.5 08.6	72.5 08.6	73.5 08.6	74.5 08.6	75.5 08.6	76.5 08.6	77.5 08.6	78.5 08.6	79.5 08.6
24	64.4 09.0	65.4 09.2	66.3 09.3	67.3 09.5	68.3 09.6	69.3 09.7	70.3 09.9	71.3 10.0	72.3 10.0	73.3 10.0	74.3 10.0	75.3 10.0	76.3 10.0	77.3 10.0	78.3 10.0	79.3 10.0
25	64.2 10.2	65.2 10.3	66.2 10.5	67.2 10.6	68.2 10.8	69.2 11.0	70.2 11.1	71.2 11.3	72.2 11.3	73.2 11.3	74.2 11.3	75.2 11.3	76.2 11.3	77.2 11.3	78.2 11.3	79.2 11.3
26	64.0 11.3	65.0 11.5	66.0 11.6	67.0 11.8	68.0 12.0	69.0 12.2	70.0 12.3	71.0 12.5	72.0 12.5	73.0 12.5	74.0 12.5	75.0 12.5	76.0 12.5	77.0 12.5	78.0 12.5	79.0 12.5
27	63.8 12.4	64.8 12.6	65.8 12.8	66.8 13.0	67.7 13.2	68.7 13.4	69.7 13.5	70.7 13.7	71.7 13.7	72.7 13.7	73.7 13.7	74.7 13.7	75.7 13.7	76.7 13.7	77.7 13.7	78.7 13.7
28	63.6 13.5	64.6 13.7	65.5 13.9	66.5 14.1	67.5 14.3	68.5 14.6	69.4 14.8	70.4 15.0	71.4 15.0	72.4 15.0	73.4 15.0	74.4 15.0	75.4 15.0	76.4 15.0	77.4 15.0	78.4 15.0
29	63.3 14.6	64.3 14.8	65.3 15.1	66.3 15.3	67.2 15.5	68.2 15.7	69.2 16.0	70.2 16.2	71.2 16.2	72.2 16.2	73.2 16.2	74.2 16.2	75.2 16.2	76.2 16.2	77.2 16.2	78.2 16.2
30	63.1 15.7	64.0 16.0	65.0 16.2	66.0 16.5	67.0 16.7	68.0 16.9	69.0 17.2	70.0 17.4	71.0 17.4	72.0 17.4	73.0 17.4	74.0 17.4	75.0 17.4	76.0 17.4	77.0 17.4	78.0 17.4
31	62.8 16.8	63.8 17.1	64.7 17.3	65.7 17.6	66.6 17.9	67.6 18.1	68.6 18.4	69.5 18.6	70.5 18.6	71.5 18.6	72.5 18.6	73.5 18.6	74.5 18.6	75.5 18.6	76.5 18.6	77.5 18.6
32	62.5 17.9	63.4 18.2	64.4 18.5	65.4 18.7	66.3 19.0	67.3 19.3	68.2 19.6	69.2 19.8	70.2 19.8	71.2 19.8	72.2 19.8	73.2 19.8	74.2 19.8	75.2 19.8	76.2 19.8	77.2 19.8
33	62.2 19.0	63.1 19.3	64.1 19.6	65.0 19.9	66.0 20.2	66.9 20.5	67.9 20.8	68.9 21.1	69.9 21.1	70.9 21.1	71.9 21.1	72.9 21.1	73.9 21.1	74.9 21.1	75.9 21.1	76.9 21.1
34	61.8 20.1	62.8 20.4	63.7 20.7	64.7 21.0	65.6 21.3	66.6 21.6	67.5 21.9	68.5 22.2	69.5 22.2	70.5 22.2	71.5 22.2	72.5 22.2	73.5 22.2	74.5 22.2	75.5 22.2	76.5 22.2
35	61.5 21.2	62.4 21.5	63.3 21.8	64.3 22.1	65.2 22.5	66.2 22.8	67.1 23.1	68.1 23.4	69.1 23.4	70.1 23.4	71.1 23.4	72.1 23.4	73.1 23.4	74.1 23.4	75.1 23.4	76.1 23.4
36	61.1 22.3	62.0 22.6	63.0 22.9	63.9 23.3	64.8 23.6	65.8 23.9	66.7 24.3	67.7 24.6	68.7 24.6	69.7 24.6	70.7 24.6	71.7 24.6	72.7 24.6	73.7 24.6	74.7 24.6	75.7 24.6
37	60.7 23.3	61.6 23.7	62.5 24.0	63.5 24.4	64.4 24.7	65.4 25.1	66.3 25.4	67.2 25.8	68.2 26.1	69.2 26.1	70.2 26.1	71.2 26.1	72.2 26.1	73.2 26.1	74.2 26.1	75.2 26.1
38	60.3 24.3	61.2 24.7	62.1 25.1	63.0 25.5	64.0 25.8	64.9 26.2	65.8 26.6	66.8 27.0	67.8 27.3	68.8 27.3	69.8 27.3	70.8 27.3	71.8 27.3	72.8 27.3	73.8 27.3	74.8 27.3
39	59.8 25.4	60.8 25.8	61.7 26.2	62.6 26.6	63.5 27.0	64.4 27.4	65.4 27.7	66.4 28.1	67.4 28.4	68.4 28.4	69.4 28.4	70.4 28.4	71.4 28.4	72.4 28.4	73.4 28.4	74.4 28.4
40	59.4 26.4	60.3 26.8	61.2 27.3	62.1 27.7	63.0 28.1	63.9 28.5	64.8 28.9	65.8 29.3	66.8 29.6	67.8 29.6	68.8 29.6	69.8 29.6	70.8 29.6	71.8 29.6	72.8 29.6	73.8 29.6
41	58.9 27.5	59.8 27.9	60.7 28.3	61.6 28.7	62.5 29.2	63.4 29.6	64.3 30.0	65.3 30.4	66.3 30.7	67.3 30.7	68.3 30.7	69.3 30.7	70.3 30.7	71.3 30.7	72.3 30.7	73.3 30.7
42	58.4 28.5	59.3 28.9	60.2 29.4	61.1 29.8	62.0 30.2	62.9 30.7	63.8 31.1	64.7 31.5	65.7 31.8	66.7 31.8	67.7 31.8	68.7 31.8	69.7 31.8	70.7 31.8	71.7 31.8	72.7 31.8
43	57.9 29.5	58.8 30.0	59.7 30.4	60.6 30.9	61.5 31.3	62.4 31.8	63.3 32.2	64.2 32.6	65.2 32.9	66.2 32.9	67.2 32.9	68.2 32.9	69.2 32.9	70.2 32.9	71.2 32.9	72.2 32.9
44	57.4 30.5	58.3 31.0	59.2 31.5	60.1 31.9	61.0 32.4	61.9 32.8	62.8 33.2	63.7 33.6	64.7 33.9	65.7 33.9	66.7 33.9	67.7 33.9	68.7 33.9	69.7 33.9	70.7 33.9	71.7 33.9
45	56.9 31.5	57.7 32.0	58.6 32.5	59.5 33.0	60.3 33.5	61.2 33.9	62.1 34.4	63.0 34.8	64.0 35.1	65.0 35.1	66.0 35.1	67.0 35.1	68.0 35.1	69.0 35.1	70.0 35.1	71.0 35.1
46	56.3 32.5	57.2 33.0	58.0 33.5	58.9 34.0	59.8 34.5	60.7 35.0	61.6 35.4	62.5 35.8	63.5 36.1	64.5 36.1	65.5 36.1	66.5 36.1	67.5 36.1	68.5 36.1	69.5 36.1	70.5 36.1
47	55.7 33.5	56.6 34.0	57.4 34.5	58.3 35.0	59.1 35.5	60.0 36.0	60.9 36.5	61.8 36.9	62.8 37.2	63.8 37.2	64.8 37.2	65.8 37.2	66.8 37.2	67.8 37.2	68.8 37.2	69.8 37.2
48	55.1 34.4	56.0 35.0	56.8 35.5	57.7 36.0	58.5 36.6	59.4 37.1	60.3 37.6	61.2 38.0	62.2 38.3	63.2 38.3	64.2 38.3	65.2 38.3	66.2 38.3	67.2 38.3	68.2 38.3	69.2 38.3
49	54.5 35.4	55.4 35.9	56.2 36.5	57.0 37.0	57.9 37.6	58.7 38.1	59.6 38.6	60.5 39.0	61.5 39.3	62.5 39.3	63.5 39.3	64.5 39.3	65.5 39.3	66.5 39.3	67.5 39.3	68.5 39.3
50	53.9 36.3	54.7 36.9	55.5 37.5	56.4 38.0	57.2 38.6	58.0 39.1	58.9 39.6	59.8 40.0	60.8 40.3	61.8 40.3	62.8 40.3	63.8 40.3	64.8 40.3	65.8 40.3	66.8 40.3	67.8 40.3
51	53.2 37.3	54.1 37.9	54.9 38.4													

Traverse Table.

(x.)

Distance, 73		74		75		76		77		78		79		80		Crs.
Dist.	Diff. Lat. | Dep.	Dist.	Diff. Lat. | Dep.	Dist.	Diff. Lat. | Dep.	Dist.	Diff. Lat. | Dep.	Dist.	Diff. Lat. | Dep.	Dist.	Diff. Lat. | Dep.	Dist.	Diff. Lat. | Dep.	Dist.	Diff. Lat. | Dep.	
1	72.9 03.6	73.9 03.6	74.9 03.7	75.9 03.7	76.9 03.8	77.9 03.8	78.9 03.9	79.9 03.9	80.9 04.0	81.9 04.1	82.9 04.2	83.9 04.3	84.9 04.4	85.9 04.5	86.9 04.6	87.9 04.7
2	72.6 07.2	73.6 07.3	74.6 07.4	75.6 07.4	76.6 07.5	77.6 07.6	78.6 07.7	79.6 07.8	80.6 07.9	81.6 08.0	82.6 08.1	83.6 08.2	84.6 08.3	85.6 08.4	86.6 08.5	87.6 08.6
3	72.2 10.7	73.2 10.9	74.2 11.0	75.2 11.1	76.2 11.3	77.2 11.4	78.2 11.6	79.2 11.7	80.2 11.8	81.2 11.9	82.2 12.0	83.2 12.1	84.2 12.2	85.2 12.3	86.2 12.4	87.2 12.5
4	71.6 14.2	72.6 14.4	73.6 14.6	74.6 14.8	75.6 15.0	76.6 15.2	77.6 15.4	78.6 15.6	79.6 15.8	80.6 16.0	81.6 16.2	82.6 16.4	83.6 16.6	84.6 16.8	85.6 17.0	86.6 17.2
5	70.8 17.7	71.8 18.0	72.8 18.2	73.7 18.5	74.7 18.7	75.7 19.0	76.6 19.2	77.6 19.4	78.6 19.6	79.6 19.8	80.6 20.0	81.6 20.2	82.6 20.4	83.6 20.6	84.6 20.8	85.6 21.0
6	69.9 21.2	70.8 21.5	71.8 21.8	72.7 22.1	73.7 22.3	74.6 22.6	75.6 22.9	76.6 23.2	77.6 23.4	78.6 23.6	79.6 23.8	80.6 24.0	81.6 24.2	82.6 24.4	83.6 24.6	84.6 24.8
7	68.7 24.6	69.7 24.9	70.6 25.3	71.6 25.6	72.5 25.9	73.4 26.3	74.4 26.6	75.3 26.9	76.3 27.2	77.3 27.4	78.3 27.6	79.3 27.8	80.3 28.0	81.3 28.2	82.3 28.4	83.3 28.6
8	67.4 27.9	68.4 28.3	69.3 28.7	70.2 29.1	71.1 29.5	72.1 29.9	73.0 30.2	73.9 30.6	74.8 30.9	75.8 31.2	76.7 31.5	77.7 31.8	78.6 32.1	79.6 32.4	80.6 32.7	81.6 33.0
9	66.0 31.2	66.9 31.6	67.8 32.1	68.7 32.5	69.6 32.9	70.5 33.4	71.4 33.8	72.3 34.2	73.2 34.5	74.1 34.8	75.0 35.1	75.9 35.4	76.8 35.7	77.7 36.0	78.6 36.3	79.5 36.6
10	64.4 34.4	65.3 34.9	66.1 35.4	67.0 35.8	67.9 36.3	68.8 36.8	69.7 37.2	70.6 37.7	71.5 38.1	72.4 38.4	73.3 38.7	74.2 39.0	75.1 39.3	76.0 39.6	76.9 39.9	77.8 40.2
11	62.6 37.5	63.5 38.0	64.3 38.6	65.2 39.1	66.0 39.6	66.9 40.1	67.8 40.6	68.6 41.1	69.5 41.5	70.4 41.8	71.3 42.1	72.2 42.4	73.1 42.7	74.0 43.0	74.9 43.3	75.8 43.6
12	60.7 40.6	61.5 41.1	62.4 41.7	63.2 42.2	64.0 42.8	64.8 43.3	65.7 43.9	66.5 44.4	67.4 44.8	68.3 45.1	69.2 45.4	70.1 45.7	71.0 46.0	71.9 46.3	72.8 46.6	73.7 46.9
13	58.6 43.5	59.4 44.1	60.2 44.7	61.0 45.3	61.8 45.9	62.6 46.5	63.4 47.1	64.3 47.7	65.1 48.2	66.0 48.7	66.9 49.2	67.8 49.7	68.7 50.2	69.6 50.7	70.5 51.2	71.4 51.7
14	56.4 46.3	57.2 46.9	58.0 47.6	58.8 48.2	59.5 48.8	60.3 49.4	61.1 50.1	61.9 50.7	62.7 51.3	63.5 51.9	64.3 52.5	65.1 53.1	65.9 53.7	66.7 54.3	67.5 54.9	68.3 55.5
15	54.1 49.0	54.8 49.7	55.6 50.4	56.3 51.0	57.0 51.7	57.8 52.4	58.5 53.0	59.3 53.7	60.1 54.3	60.9 54.9	61.7 55.5	62.5 56.1	63.3 56.7	64.1 57.3	64.9 57.9	65.7 58.5
16	51.6 51.6	52.3 52.3	53.0 53.0	53.7 53.7	54.4 54.4	55.2 55.2	55.9 55.9	56.6 56.6	57.3 57.3	58.0 58.0	58.7 58.7	59.4 59.4	60.1 60.1	60.8 60.8	61.5 61.5	62.2 62.2
17	73.0 01.3	74.0 01.3	75.0 01.3	76.0 01.3	77.0 01.3	78.0 01.4	79.0 01.4	80.0 01.4	81.0 01.5	82.0 01.5	83.0 01.6	84.0 01.6	85.0 01.7	86.0 01.7	87.0 01.8	88.0 01.8
18	73.0 02.5	74.0 02.5	75.0 02.6	76.0 02.7	77.0 02.7	78.0 02.7	79.0 02.8	80.0 02.8	81.0 02.9	82.0 02.9	83.0 03.0	84.0 03.0	85.0 03.1	86.0 03.1	87.0 03.2	88.0 03.2
19	72.9 03.8	73.9 03.9	74.9 03.9	75.9 04.0	76.9 04.0	77.9 04.1	78.9 04.1	79.9 04.2	80.9 04.2	81.9 04.3	82.9 04.3	83.9 04.4	84.9 04.4	85.9 04.5	86.9 04.5	87.9 04.6
20	72.8 05.1	73.8 05.2	74.8 05.2	75.8 05.3	76.8 05.4	77.8 05.4	78.8 05.5	79.8 05.5	80.8 05.6	81.8 05.6	82.8 05.7	83.8 05.7	84.8 05.8	85.8 05.8	86.8 05.9	87.8 05.9
21	72.7 06.4	73.7 06.4	74.7 06.5	75.7 06.6	76.7 06.7	77.7 06.8	78.7 06.9	79.7 06.9	80.7 07.0	81.7 07.0	82.7 07.1	83.7 07.1	84.7 07.2	85.7 07.2	86.7 07.3	87.7 07.3
22	72.6 07.6	73.6 07.7	74.6 07.8	75.6 07.9	76.6 08.0	77.6 08.2	78.6 08.3	79.6 08.4	80.6 08.4	81.6 08.5	82.6 08.5	83.6 08.6	84.6 08.6	85.6 08.7	86.6 08.7	87.6 08.8
23	72.5 08.9	73.4 09.0	74.4 09.1	75.4 09.3	76.4 09.4	77.4 09.6	78.4 09.6	79.4 09.7	80.4 09.7	81.4 09.8	82.4 09.8	83.4 09.9	84.4 09.9	85.4 10.0	86.4 10.0	87.4 10.1
24	72.3 10.2	73.3 10.3	74.3 10.4	75.3 10.6	76.3 10.7	77.3 10.9	78.3 11.0	79.3 11.1	80.3 11.1	81.3 11.2	82.3 11.2	83.3 11.3	84.3 11.3	85.3 11.4	86.3 11.4	87.3 11.5
25	72.1 11.4	73.1 11.6	74.1 11.7	75.1 11.9	76.1 12.0	77.0 12.2	78.0 12.4	79.0 12.5	80.0 12.5	81.0 12.6	82.0 12.6	83.0 12.7	84.0 12.7	85.0 12.8	86.0 12.8	87.0 12.9
26	71.9 12.7	72.9 12.8	73.9 13.0	74.8 13.2	75.8 13.4	76.8 13.5	77.8 13.7	78.8 13.7	79.8 13.8	80.8 13.9	81.8 13.9	82.8 14.0	83.8 14.0	84.8 14.1	85.8 14.1	86.8 14.2
27	71.7 13.9	72.6 14.1	73.6 14.3	74.6 14.5	75.6 14.7	76.6 14.9	77.5 15.1	78.5 15.3	79.5 15.3	80.5 15.4	81.5 15.4	82.5 15.5	83.5 15.5	84.5 15.6	85.5 15.6	86.5 15.7
28	71.4 15.2	72.4 15.4	73.4 15.6	74.3 15.8	75.3 16.0	76.3 16.2	77.3 16.4	78.3 16.6	79.3 16.6	80.3 16.7	81.3 16.7	82.3 16.8	83.3 16.8	84.3 16.9	85.3 16.9	86.3 17.0
29	71.1 16.4	72.1 16.6	73.1 16.9	74.1 17.1	75.0 17.3	76.0 17.5	77.0 17.8	77.9 18.0	78.9 18.0	79.9 18.1	80.9 18.1	81.9 18.2	82.9 18.2	83.9 18.3	84.9 18.3	85.9 18.4
30	70.8 17.7	71.8 17.9	72.8 18.1	73.7 18.4	74.7 18.6	75.7 18.9	76.7 19.1	77.6 19.4	78.6 19.4	79.6 19.5	80.6 19.5	81.6 19.6	82.6 19.6	83.6 19.7	84.6 19.7	85.6 19.8
31	70.5 18.9	71.5 19.2	72.4 19.4	73.4 19.7	74.4 19.9	75.3 20.2	76.3 20.4	77.3 20.7	78.3 20.7	79.3 20.8	80.3 20.8	81.3 20.9	82.3 20.9	83.3 21.0	84.3 21.0	85.3 21.1
32	70.2 20.1	71.1 20.4	72.1 20.7	73.1 20.9	74.0 21.2	75.0 21.5	75.9 21.8	76.9 22.1	77.9 22.1	78.9 22.2	79.9 22.2	80.9 22.3	81.9 22.3	82.9 22.4	83.9 22.4	84.9 22.5
33	69.8 21.3	70.8 21.6	71.7 21.9	72.7 22.2	73.6 22.5	74.6 22.8	75.5 23.1	76.5 23.4	77.5 23.4	78.5 23.5	79.5 23.5	80.5 23.6	81.5 23.6	82.5 23.7	83.5 23.7	84.5 23.8
34	69.4 22.6	70.4 22.9	71.3 23.2	72.3 23.5	73.2 23.8	74.2 24.1	75.1 24.4	76.1 24.7	77.1 24.7	78.1 24.8	79.1 24.8	80.1 24.9	81.1 24.9	82.1 25.0	83.1 25.0	84.1 25.1
35	69.0 23.8	70.0 24.1	70.9 24.4	71.9 24.7	72.8 25.1	73.8 25.4	74.7 25.7	75.6 26.0	76.6 26.0	77.6 26.1	78.6 26.1	79.6 26.2	80.6 26.2	81.6 26.3	82.6 26.3	83.6 26.4
36	68.6 25.0	69.5 25.3	70.5 25.7	71.4 26.0	72.4 26.3	73.3 26.7	74.2 27.0	75.2 27.4	76.2 27.4	77.2 27.5	78.2 27.5	79.2 27.6	80.2 27.6	81.2 27.7	82.2 27.7	83.2 27.8
37	68.2 26.2	69.1 26.5	70.0 26.9	71.0 27.2	71.9 27.6	72.8 28.0	73.8 28.3	74.7 28.7	75.7 28.7	76.7 28.8	77.7 28.8	78.7 28.9	79.7 28.9	80.7 29.0	81.7 29.0	82.7 29.1
38	67.7 27.3	68.6 27.7	69.5 28.1	70.5 28.5	71.4 28.8	72.3 29.2	73.2 29.6	74.2 30.0	75.2 30.0	76.2 30.1	77.2 30.1	78.2 30.2	79.2 30.2	80.2 30.3	81.2 30.3	82.2 30.4
39	67.2 28.5	68.1 28.9	69.0 29.3	70.0 29.7	70.9 30.1	71.8 30.5	72.7 30.9	73.7 31.3	74.7 31.3	75.7 31.4	76.7 31.4	77.7 31.5	78.7 31.5	79.7 31.6	80.7 31.6	81.7 31.7
40	66.7 29.7	67.6 30.1	68.5 30.5	69.4 30.9	70.3 31.3	71.3 31.7	72.2 32.1	73.1 32.5	74.1 32.5	75.1 32.6	76.1 32.6	77.1 32.7	78.1 32.7	79.1 32.8	80.1 32.8	81.1 32.9
41	66.2 30.9	67.1 31.3	68.0 31.7	68.9 32.1	69.8 32.5	70.7 32.9	71.6 33.3	72.6 33.7	73.6 33.7	74.6 33.8	75.6 33.8	76.6 33.9	77.6 33.9	78.6 34.0	79.6 34.0	80.6 34.1
42	65.6 32.0	66.5 32.4	67.4 32.9	68.3 33.3	69.2 33.8	70.1 34.2	71.0 34.6	71.9 35.0	72.9 35.0	73.9 35.1	74.9 35.1	75.9 35.2	76.9 35.2	77.9 35.3	78.9 35.3	79.9 35.4
43	65.0 33.1	65.9 33.6	66.8 34.0	67.7 34.5	68.6 35.0	69.5 35.4	70.4 35.9	71.3 36.3	72.3 36.3	73.3 36.4	74.3 36.4	75.3 36.5	76.3 36.5	77.3 36.6	78.3 36.6	79.3 36.7
44	64.5 34.3	65.3 34.7	66.2 35.2	67.1 35.7	68.0 36.1	68.9 36.6	69.8 37.1	70.6 37.6	71.6 37.6	72.6 37.6	73.6 37.7	74.6 37.7	75.6 37.8	76.6 37.8	77.6 37.9	78.6 37.9
45	63.8 35.4	64.7 35.9	65.6 36.4	66.5 36.8	67.3 37.3	68.2 37.8	69.1 38.3	70.0 38.8	71.0 38.8	72.0 38.8	73.0 38.9	74.0 38.9	75.0 39.0	76.0 39.0	77.0 39.1	78.0 39.1
46	63.2 36.5	64.1 37.0	65.0 37.5	65.8 38.0	66.7 38.5	67.5 39.0	68.4 39.5	69.3 39.9	70.3 39.9	71.3 39.9	72.3 40.0	73.3 40.0	74.3 40.1	75.3 40.1	76.3 40.2	77.3 40.2
47	62.6 37.6	63.4 38.1	64.3 38.6	65.1 39.1	66.0 39.7	66.9 40.2	67.7 40.7	68.6 41.2	69.6 41.2	70.6 41.2	71.6 41.3	72.6 41.3	73.6 41.4	74.6 41.4	75.6 41.5	76.6 41.5
48	61.9 38.7	62.8 39.2	63.6 39.7	64.5 40.3	65.3 40.8	66.1 41.3	67.0 41.8	67.9 42.3	68.9 42.3	69.9 42.3	70.9 42.4	71.9 42.4	72.9 42.5	73.9 42.5	74.9 42.6	75.9 42.6
49	61.2 39.8	62.1 40.3	62.9 40.8	63.7 41.4	64.6 41.9	65.4 42.5	66.3 43.0	67.1 43.6	68.1 43.6	69.1 43.6	70.1 43.7	71.1 43.7	72.1 43.8	73.1 43.8	74.1 43.9	75.1 43.9
50	60.5 40.8	61.3 41.4	62.2 41.9	63.0 42.5	63.8 43.1	64.7 43.6	65.5 44.2	66.4 44.7	67.4 44.7	68.4 44.7	69.4 44.8	70.4 44.8	71.4 44.9	72.4 44.9	73.4 45.0	74.4 45.0
51	59.8 41.9	60.6 42.4	61.4 43.0	62.3 43.6	63.1 44.2	63.9										

Traverse Table.

(x)

Distances. 81		82		83		84		85		86		87		88		Crs.
Lat.	Diff. Lat. | Dep.	Lat.	Diff. Lat. | Dep.	Lat.	Diff. Lat. | Dep.	Lat.	Diff. Lat. | Dep.	Lat.	Diff. Lat. | Dep.	Lat.	Diff. Lat. | Dep.	Lat.	Diff. Lat. | Dep.	Lat.	Diff. Lat. | Dep.	
1	80.9 04.0	81.9 04.0	82.9 04.1	83.9 04.1	84.9 04.2	85.9 04.2	86.9 04.3	87.9 04.3	88.9 04.3	89.9 04.3	90.9 04.3	91.9 04.3	92.9 04.3	93.9 04.3	94.9 04.3	79
2	80.6 07.9	81.6 08.0	82.6 08.1	83.6 08.2	84.6 08.3	85.6 08.4	86.6 08.5	87.6 08.6	88.6 08.6	89.6 08.6	90.6 08.6	91.6 08.6	92.6 08.6	93.6 08.6	94.6 08.6	78
3	80.1 11.9	81.1 12.0	82.1 12.2	83.1 12.3	84.1 12.5	85.1 12.6	86.1 12.8	87.0 12.9	87.5 12.9	88.0 12.9	88.5 12.9	89.0 12.9	89.5 12.9	90.0 12.9	90.5 12.9	77
4	79.4 15.8	80.4 16.0	81.4 16.2	82.4 16.4	83.4 16.6	84.3 16.8	85.3 17.0	86.3 17.2	87.0 17.2	87.5 17.2	88.0 17.2	88.5 17.2	89.0 17.2	89.5 17.2	90.0 17.2	76
5	78.6 19.7	79.5 19.9	80.5 20.2	81.5 20.4	82.5 20.7	83.4 20.9	84.4 21.1	85.4 21.4	86.4 21.4	87.0 21.4	87.5 21.4	88.0 21.4	88.5 21.4	89.0 21.4	89.5 21.4	75
6	77.5 23.5	78.5 23.8	79.4 24.1	80.4 24.4	81.3 24.7	82.3 25.0	83.3 25.2	84.2 25.5	85.0 25.5	85.5 25.5	86.0 25.5	86.5 25.5	87.0 25.5	87.5 25.5	88.0 25.5	74
7	76.3 27.3	77.2 27.6	78.1 28.0	79.1 28.3	80.0 28.6	81.0 29.0	81.9 29.3	82.9 29.6	83.8 29.6	84.5 29.6	85.0 29.6	85.5 29.6	86.0 29.6	86.5 29.6	87.0 29.6	73
8	74.8 31.0	75.8 31.4	76.7 31.8	77.6 32.1	78.5 32.5	79.5 32.9	80.4 33.3	81.3 33.7	82.2 33.7	83.0 33.7	83.5 33.7	84.0 33.7	84.5 33.7	85.0 33.7	85.5 33.7	72
9	73.2 34.6	74.1 35.1	75.0 35.5	75.9 35.9	76.8 36.3	77.7 36.8	78.6 37.2	79.6 37.6	80.5 37.6	81.3 37.6	82.0 37.6	82.5 37.6	83.0 37.6	83.5 37.6	84.0 37.6	71
10	71.4 38.2	72.3 38.6	73.2 39.1	74.1 39.6	75.0 40.1	75.9 40.5	76.7 41.0	77.6 41.5	78.5 41.5	79.3 41.5	80.0 41.5	80.5 41.5	81.0 41.5	81.5 41.5	82.0 41.5	70
11	69.5 41.6	70.3 42.1	71.2 42.7	72.0 43.2	72.9 43.7	73.8 44.2	74.6 44.7	75.5 45.2	76.4 45.2	77.2 45.2	78.0 45.2	78.5 45.2	79.0 45.2	79.5 45.2	80.0 45.2	69
12	67.3 45.0	68.2 45.5	69.0 46.1	69.8 46.7	70.7 47.2	71.5 47.8	72.3 48.3	73.2 48.9	74.0 48.9	74.8 48.9	75.5 48.9	76.3 48.9	77.0 48.9	77.5 48.9	78.0 48.9	68
13	65.1 48.3	65.9 48.9	66.7 49.4	67.5 50.0	68.3 50.6	69.1 51.2	69.9 51.8	70.7 52.4	71.5 52.4	72.3 52.4	73.0 52.4	73.8 52.4	74.5 52.4	75.3 52.4	76.0 52.4	67
14	62.6 51.4	63.4 52.0	64.2 52.7	64.9 53.3	65.7 53.9	66.5 54.6	67.2 55.2	68.0 55.8	68.8 55.8	69.5 55.8	70.3 55.8	71.0 55.8	71.8 55.8	72.5 55.8	73.3 55.8	66
15	60.0 54.4	60.8 55.0	61.5 55.7	62.2 56.4	63.0 57.1	63.7 57.7	64.5 58.4	65.2 59.1	66.0 59.1	66.8 59.1	67.5 59.1	68.3 59.1	69.0 59.1	69.8 59.1	70.5 59.1	65
16	57.3 57.3	58.0 58.0	58.7 58.7	59.4 59.4	60.1 60.1	60.8 60.8	61.5 61.5	62.2 62.2	63.0 62.2	63.7 62.2	64.5 62.2	65.2 62.2	66.0 62.2	66.8 62.2	67.5 62.2	64
17	81.0 01.4	82.0 01.4	83.0 01.4	84.0 01.5	85.0 01.5	86.0 01.5	87.0 01.5	88.0 01.5	89.0 01.5	90.0 01.5	91.0 01.5	92.0 01.5	93.0 01.5	94.0 01.5	95.0 01.5	89
18	81.0 02.0	82.0 02.0	83.0 02.0	84.0 02.1	85.0 02.1	86.0 02.1	87.0 02.1	88.0 02.1	89.0 02.1	90.0 02.1	91.0 02.1	92.0 02.1	93.0 02.1	94.0 02.1	95.0 02.1	88
19	80.9 04.2	81.9 04.3	82.9 04.3	83.9 04.4	84.9 04.4	85.9 04.5	86.9 04.5	87.9 04.6	88.9 04.6	89.9 04.6	90.9 04.6	91.9 04.6	92.9 04.6	93.9 04.6	94.9 04.6	87
20	80.8 05.7	81.8 05.7	82.8 05.8	83.8 05.9	84.8 05.9	85.8 06.0	86.8 06.1	87.8 06.1	88.8 06.1	89.8 06.1	90.8 06.1	91.8 06.1	92.8 06.1	93.8 06.1	94.8 06.1	86
21	80.7 07.1	81.7 07.1	82.7 07.2	83.7 07.3	84.7 07.4	85.7 07.5	86.7 07.6	87.7 07.7	88.7 07.7	89.7 07.7	90.7 07.7	91.7 07.7	92.7 07.7	93.7 07.7	94.7 07.7	85
22	80.6 08.5	81.6 08.6	82.6 08.7	83.6 08.8	84.6 08.9	85.6 09.0	86.6 09.1	87.6 09.2	88.6 09.2	89.6 09.2	90.6 09.2	91.6 09.2	92.6 09.2	93.6 09.2	94.6 09.2	84
23	80.4 09.9	81.4 10.0	82.4 10.1	83.4 10.2	84.4 10.4	85.4 10.5	86.4 10.6	87.4 10.7	88.4 10.7	89.4 10.7	90.4 10.7	91.4 10.7	92.4 10.7	93.4 10.7	94.4 10.7	83
24	80.2 11.3	81.2 11.4	82.2 11.6	83.2 11.7	84.2 11.8	85.2 12.0	86.2 12.1	87.2 12.2	88.2 12.2	89.2 12.2	90.2 12.2	91.2 12.2	92.2 12.2	93.2 12.2	94.2 12.2	82
25	80.0 12.7	81.0 12.8	82.0 13.0	83.0 13.1	84.0 13.3	84.9 13.5	85.9 13.6	86.9 13.8	87.9 13.8	88.9 13.8	89.9 13.8	90.9 13.8	91.9 13.8	92.9 13.8	93.9 13.8	81
26	79.8 14.1	80.8 14.2	81.7 14.4	82.7 14.6	83.7 14.8	84.7 14.9	85.7 15.1	86.7 15.3	87.7 15.3	88.7 15.3	89.7 15.3	90.7 15.3	91.7 15.3	92.7 15.3	93.7 15.3	80
27	79.5 15.5	80.5 15.6	81.5 15.8	82.5 16.0	83.4 16.2	84.4 16.4	85.4 16.6	86.4 16.8	87.4 16.8	88.4 16.8	89.4 16.8	90.4 16.8	91.4 16.8	92.4 16.8	93.4 16.8	79
28	79.2 16.8	80.2 17.0	81.2 17.3	82.2 17.5	83.1 17.7	84.1 17.9	85.1 18.1	86.1 18.3	87.1 18.3	88.1 18.3	89.1 18.3	90.1 18.3	91.1 18.3	92.1 18.3	93.1 18.3	78
29	78.9 18.2	79.9 18.4	80.9 18.7	81.8 18.9	82.8 19.1	83.8 19.3	84.8 19.6	85.7 19.8	86.7 19.8	87.7 19.8	88.7 19.8	89.7 19.8	90.7 19.8	91.7 19.8	92.7 19.8	77
30	78.6 19.6	79.6 19.8	80.5 20.1	81.5 20.3	82.5 20.6	83.4 20.8	84.4 21.0	85.4 21.3	86.4 21.3	87.4 21.3	88.4 21.3	89.4 21.3	90.4 21.3	91.4 21.3	92.4 21.3	76
31	78.2 21.0	79.2 21.2	80.2 21.5	81.1 21.7	82.1 22.0	83.1 22.3	84.0 22.5	85.0 22.8	86.0 22.8	87.0 22.8	88.0 22.8	89.0 22.8	90.0 22.8	91.0 22.8	92.0 22.8	75
32	77.9 22.3	78.8 22.6	79.8 22.9	80.7 23.2	81.7 23.4	82.7 23.7	83.6 24.0	84.6 24.3	85.6 24.3	86.6 24.3	87.6 24.3	88.6 24.3	89.6 24.3	90.6 24.3	91.6 24.3	74
33	77.5 23.7	78.4 24.0	79.4 24.3	80.3 24.6	81.3 24.9	82.2 25.1	83.2 25.4	84.2 25.7	85.2 25.7	86.2 25.7	87.2 25.7	88.2 25.7	89.2 25.7	90.2 25.7	91.2 25.7	73
34	77.0 25.0	78.0 25.3	78.9 25.6	79.9 26.0	80.8 26.3	81.8 26.6	82.7 26.9	83.7 27.2	84.7 27.2	85.7 27.2	86.7 27.2	87.7 27.2	88.7 27.2	89.7 27.2	90.7 27.2	72
35	76.6 26.4	77.5 26.7	78.5 27.0	79.4 27.3	80.4 27.7	81.3 28.0	82.3 28.3	83.2 28.7	84.2 28.7	85.2 28.7	86.2 28.7	87.2 28.7	88.2 28.7	89.2 28.7	90.2 28.7	71
36	76.1 27.7	77.1 28.0	78.0 28.4	78.9 28.7	79.9 29.1	80.8 29.4	81.8 29.8	82.7 30.1	83.7 30.1	84.7 30.1	85.7 30.1	86.7 30.1	87.7 30.1	88.7 30.1	89.7 30.1	70
37	75.6 29.0	76.6 29.4	77.5 29.7	78.4 30.1	79.4 30.5	80.3 30.8	81.2 31.2	82.2 31.5	83.2 31.5	84.2 31.5	85.2 31.5	86.2 31.5	87.2 31.5	88.2 31.5	89.2 31.5	69
38	75.1 30.3	76.0 30.7	77.0 31.1	77.9 31.5	78.8 31.8	79.7 32.2	80.7 32.6	81.6 33.0	82.6 33.0	83.6 33.0	84.6 33.0	85.6 33.0	86.6 33.0	87.6 33.0	88.6 33.0	68
39	74.6 31.6	75.5 32.0	76.4 32.4	77.3 32.8	78.2 33.2	79.2 33.6	80.1 34.0	81.0 34.4	82.0 34.4	83.0 34.4	84.0 34.4	85.0 34.4	86.0 34.4	87.0 34.4	88.0 34.4	67
40	74.0 32.9	74.9 33.4	75.8 33.8	76.7 34.2	77.7 34.6	78.6 35.0	79.5 35.4	80.4 35.8	81.4 35.8	82.4 35.8	83.4 35.8	84.4 35.8	85.4 35.8	86.4 35.8	87.4 35.8	66
41	73.4 34.2	74.3 34.7	75.2 35.1	76.1 35.5	77.0 35.9	77.9 36.3	78.8 36.8	79.8 37.2	80.8 37.2	81.8 37.2	82.8 37.2	83.8 37.2	84.8 37.2	85.8 37.2	86.8 37.2	65
42	72.8 35.5	73.7 35.9	74.6 36.4	75.5 36.8	76.4 37.3	77.3 37.7	78.2 38.1	79.1 38.6	80.1 38.6	81.1 38.6	82.1 38.6	83.1 38.6	84.1 38.6	85.1 38.6	86.1 38.6	64
43	72.2 36.8	73.1 37.2	74.0 37.7	74.9 38.1	75.7 38.6	76.6 39.0	77.5 39.5	78.4 40.0	79.4 40.0	80.4 40.0	81.4 40.0	82.4 40.0	83.4 40.0	84.4 40.0	85.4 40.0	63
44	71.5 38.0	72.4 38.5	73.3 39.0	74.2 39.4	75.1 39.9	75.9 40.4	76.8 40.8	77.7 41.3	78.7 41.3	79.7 41.3	80.7 41.3	81.7 41.3	82.7 41.3	83.7 41.3	84.7 41.3	62
45	70.8 39.3	71.7 39.8	72.6 40.2	73.5 40.7	74.3 41.2	75.2 41.7	76.1 42.2	77.0 42.7	78.0 42.7	79.0 42.7	80.0 42.7	81.0 42.7	82.0 42.7	83.0 42.7	84.0 42.7	61
46	70.1 40.5	71.0 41.0	71.9 41.5	72.7 42.0	73.6 42.5	74.5 43.0	75.3 43.5	76.2 44.0	77.2 44.0	78.2 44.0	79.2 44.0	80.2 44.0	81.2 44.0	82.2 44.0	83.2 44.0	60
47	69.4 41.7	70.3 42.2	71.1 42.7	72.0 43.3	72.9 43.8	73.7 44.3	74.6 44.8	75.4 45.3	76.4 45.3	77.4 45.3	78.4 45.3	79.4 45.3	80.4 45.3	81.4 45.3	82.4 45.3	59
48	68.7 42.9	69.5 43.5	70.4 44.0	71.2 44.5	72.1 45.0	72.9 45.6	73.8 46.1	74.6 46.6	75.6 46.6	76.6 46.6	77.6 46.6	78.6 46.6	79.6 46.6	80.6 46.6	81.6 46.6	58
49	67.9 44.1	68.8 44.7	69.6 45.2	70.4 45.7	71.3 46.3	72.1 46.8	73.0 47.4	73.8 47.9	74.8 47.9	75.8 47.9	76.8 47.9	77.8 47.9	78.8 47.9	79.8 47.9	80.8 47.9	57
50	67.2 45.3	68.0 45.9	68.8 46.4	69.6 47.0	70.5 47.5	71.3 48.1	72.1 48.6	73.0 49.2	74.0 49.2	75.0 49.2	76.0 49.2	77.0 49.2	78.0 49.2	79.0 49.2	80.0 49.2	56
51	66.4 46.5	67.2 47.0	68.0 47.6	68.8 48.2	69.6 48.8	70.4 49.3	71.3 49.9	72.1 50.5	73.0 50.5	74.0 50.5	75.0 50.5	76.0 50.5	77.0 50.5	78.0 50.5	79.0 50.5	55
52	65.5 47.6	66.3 48.2	67.1 48.8	68.0 49.4	68.8 50.0	69.6 50.5	70.4 51.1	71.2 51.7	72.1 51.7	73.0 51.7	74.0 51.7	75.0 51.7	76.0 51.7	77.0 51.7	7	

Traverse Table.

(x.)

Distance.	89	90	91	92	93	94	95	96	
Course.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Course.
1	88.9 04.4	89.9 04.4	90.9 04.3	91.9 04.5	92.9 04.6	93.9 04.6	94.9 04.7	95.9 04.7	78
2	88.6 08.7	89.6 08.8	90.6 08.9	91.6 09.0	92.6 09.1	93.5 09.2	94.5 09.3	95.5 09.4	79
3	88.0 13.1	89.0 13.2	90.0 13.3	91.0 13.5	92.0 13.6	93.0 13.6	94.0 13.9	95.0 14.1	80
4	87.3 17.4	88.3 17.6	89.2 17.8	90.2 18.0	91.2 18.1	92.2 18.3	93.2 18.5	94.2 18.7	81
5	86.3 21.6	87.3 21.9	88.3 22.1	89.2 22.4	90.2 22.6	91.2 22.8	92.2 23.1	93.1 23.3	82
6	85.2 25.8	86.1 26.1	87.1 26.4	88.0 26.7	89.0 27.0	90.0 27.3	90.9 27.6	91.9 27.9	83
7	83.8 30.0	84.7 30.3	85.7 30.7	86.6 31.0	87.6 31.3	88.5 31.7	89.4 32.0	90.4 32.3	84
8	82.2 34.1	83.2 34.4	84.1 34.8	85.0 35.2	85.9 35.6	86.8 36.0	87.8 36.4	88.7 36.7	85
9	80.5 38.1	81.4 38.5	82.3 38.9	83.2 39.3	84.1 39.8	85.0 40.2	85.9 40.6	86.8 41.1	86
10	78.5 41.9	79.4 42.4	80.3 42.9	81.1 43.4	82.0 43.8	82.9 44.3	83.8 44.8	84.7 45.2	87
11	76.3 45.7	77.2 46.3	78.1 46.8	78.9 47.3	79.8 47.8	80.6 48.3	81.5 48.8	82.4 49.3	88
12	74.0 49.4	74.8 50.0	75.7 50.6	76.5 51.1	77.3 51.7	78.2 52.2	79.0 52.8	79.8 53.3	89
13	71.5 53.0	72.3 53.6	73.1 54.2	73.9 54.8	74.7 55.4	75.5 56.0	76.3 56.6	77.1 57.2	90
14	68.8 56.5	69.6 57.1	70.3 57.7	71.1 58.4	71.9 59.0	72.7 59.6	73.4 60.3	74.2 60.9	91
15	65.9 59.8	66.7 60.4	67.4 61.1	68.2 61.8	68.9 62.4	69.6 63.1	70.4 63.8	71.1 64.5	92
16	62.9 62.9	63.6 63.6	64.3 64.3	65.1 65.1	65.8 65.8	66.5 66.5	67.2 67.2	67.9 67.9	93
17	89.0 01.6	90.0 01.6	91.0 01.6	92.0 01.6	93.0 01.6	94.0 01.6	95.0 01.7	96.0 01.7	89
18	88.9 03.1	89.9 03.1	90.9 03.2	91.9 03.2	92.9 03.2	93.9 03.3	94.9 03.3	95.9 03.4	90
19	88.9 04.7	89.9 04.7	90.9 04.8	91.9 04.8	92.9 04.9	93.9 04.9	94.9 05.0	95.9 05.0	91
20	88.8 06.2	89.8 06.3	90.8 06.3	91.8 06.4	92.8 06.5	93.8 06.6	94.8 06.6	95.8 06.7	92
21	88.7 07.8	89.7 07.8	90.7 07.9	91.6 08.0	92.6 08.1	93.6 08.2	94.6 08.3	95.6 08.4	93
22	88.5 09.3	89.5 09.4	90.5 09.5	91.5 09.6	92.5 09.7	93.5 09.8	94.5 09.9	95.5 10.0	94
23	88.3 10.8	89.3 11.0	90.3 11.1	91.3 11.2	92.3 11.3	93.3 11.6	94.3 11.6	95.3 11.7	95
24	88.1 12.4	89.1 12.5	90.1 12.7	91.1 12.8	92.1 12.9	93.1 13.1	94.1 13.2	95.1 13.4	96
25	87.9 13.9	88.9 14.1	89.9 14.2	90.9 14.4	91.9 14.5	92.8 14.7	93.8 14.9	94.8 15.0	97
26	87.6 15.5	88.6 15.6	89.6 15.8	90.6 16.0	91.6 16.1	92.6 16.3	93.6 16.5	94.5 16.7	98
27	87.4 17.0	88.3 17.2	89.3 17.4	90.3 17.6	91.3 17.7	92.3 17.9	93.3 18.1	94.2 18.3	99
28	87.1 18.5	88.0 18.7	89.0 18.9	90.0 19.1	91.0 19.3	91.9 19.5	92.9 19.8	93.9 20.0	100
29	86.7 20.0	87.7 20.2	88.7 20.5	89.8 20.7	90.6 20.9	91.6 21.1	92.6 21.4	93.5 21.6	101
30	86.4 21.5	87.3 21.8	88.3 22.0	89.3 22.3	90.2 22.5	91.2 22.7	92.2 23.0	93.1 23.2	102
31	86.0 23.0	86.9 23.3	87.9 23.6	88.9 23.8	89.8 24.1	90.8 24.3	91.8 24.6	92.7 24.8	103
32	85.6 24.5	86.5 24.8	87.5 25.1	88.4 25.4	89.4 25.6	90.4 25.9	91.3 26.2	92.3 26.5	104
33	85.1 26.0	86.1 26.3	87.0 26.6	88.0 26.9	88.9 27.2	89.9 27.5	90.8 27.8	91.8 28.1	105
34	84.6 27.5	85.6 27.8	86.5 28.1	87.5 28.4	88.4 28.7	89.4 29.0	90.4 29.4	91.3 29.7	106
35	84.2 29.0	85.1 29.3	86.0 29.6	87.0 30.0	87.9 30.3	88.9 30.6	89.8 30.9	90.8 31.3	107
36	83.6 30.4	84.6 30.8	85.5 31.1	86.5 31.5	87.4 31.8	88.3 32.1	89.3 32.5	90.2 32.8	108
37	83.1 31.9	84.0 32.3	85.0 32.6	85.9 33.0	86.8 33.3	87.8 33.7	88.7 34.0	89.6 34.4	109
38	82.5 33.3	83.4 33.7	84.4 34.1	85.3 34.5	86.2 34.8	87.2 35.2	88.1 35.6	89.0 36.0	110
39	81.9 34.8	82.8 35.2	83.8 35.6	84.7 35.9	85.6 36.3	86.5 36.7	87.4 37.1	88.4 37.5	111
40	81.3 36.2	82.2 36.6	83.1 37.0	84.0 37.4	85.0 37.8	85.9 38.2	86.8 38.6	87.7 39.0	112
41	80.7 37.6	81.6 38.0	82.5 38.5	83.4 38.9	84.3 39.3	85.2 39.7	86.1 40.1	87.0 40.6	113
42	80.0 39.0	80.9 39.5	81.8 39.9	82.7 40.3	83.6 40.8	84.5 41.2	85.4 41.6	86.3 42.1	114
43	79.3 40.4	80.2 40.9	81.1 41.3	82.0 41.8	82.9 42.2	83.8 42.7	84.6 43.1	85.5 43.6	115
44	78.6 41.8	79.5 42.3	80.3 42.7	81.2 43.2	82.1 43.7	83.0 44.1	83.9 44.6	84.8 45.1	116
45	77.8 43.1	78.7 43.6	79.6 44.1	80.5 44.6	81.3 45.1	82.2 45.6	83.1 46.1	84.0 46.5	117
46	77.1 44.5	77.9 45.0	78.8 45.5	79.7 46.0	80.5 46.5	81.4 47.0	82.3 47.5	83.1 48.0	118
47	76.3 45.8	77.1 46.4	78.0 46.9	78.9 47.4	79.7 47.9	80.6 48.4	81.4 48.9	82.3 49.4	119
48	75.5 47.2	76.3 47.7	77.2 48.2	78.0 48.8	78.9 49.3	79.7 49.8	80.6 50.3	81.4 50.9	120
49	74.6 48.5	75.5 49.0	76.3 49.6	77.2 50.1	78.0 50.7	78.8 51.2	79.7 51.7	80.5 52.3	121
50	73.8 49.8	74.6 50.3	75.4 50.9	76.3 51.4	77.1 52.0	77.9 52.6	78.8 53.1	79.6 53.7	122
51	72.9 51.0	73.7 51.6	74.5 52.2	75.4 52.8	76.2 53.3	77.0 53.9	77.8 54.5	78.6 55.1	123
52	72.0 52.3	72.8 52.9	73.6 53.5	74.4 54.1	75.2 54.7	76.0 55.3	76.9 55.8	77.7 56.4	124
53	71.1 53.6	71.9 54.2	72.7 54.8	73.5 55.4	74.3 56.0	75.1 56.6	75.9 57.2	76.7 57.8	125
54	70.1 54.8	70.9 55.4	71.7 56.0	72.5 56.6	73.3 57.3	74.1 57.9	74.9 58.5	75.6 59.1	126
55	69.2 56.0	69.9 56.6	70.7 57.3	71.5 57.9	72.3 58.5	73.1 59.2	73.8 59.8	74.6 60.4	127
56	68.2 57.2	68.9 57.9	69.7 58.5	70.5 59.1	71.2 59.8	72.0 60.4	72.8 61.1	73.5 61.7	128
57	67.2 58.4	67.9 59.0	68.7 59.7	69.4 60.4	70.2 61.0	70.9 61.7	71.7 62.3	72.5 63.0	129
58	66.1 59.6	66.9 60.2	67.6 60.9	68.4 61.6	69.1 62.2	69.9 62.9	70.6 63.6	71.3 64.2	130
59	65.1 60.7	65.8 61.4	66.6 62.1	67.3 62.7	68.0 63.4	68.7 64.1	69.5 64.8	70.2 65.5	131
60	64.0 61.8	64.7 62.5	65.5 63.2	66.2 63.9	66.9 64.6	67.6 65.3	68.3 66.0	69.1 66.7	132
61	62.9 62.9	63.6 63.6	64.3 64.3	65.1 65.1	65.8 65.8	66.5 66.5	67.2 67.2	67.9 67.9	133

Traverse Table.

(2.)

Distance. 97		98		99		100		101		102		103		104		Crs.
Com.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	
97	96.9 04.8	97.3 04.8	98.9 04.9	99.9 04.9	100.9 05.0	101.9 05.0	102.9 05.1	103.9 05.1	104.9 05.1	105.9 05.1	106.9 05.1	107.9 05.1	108.9 05.1	109.9 05.1	110.9 05.1	98
98	96.5 09.5	97.5 09.5	98.5 09.7	99.5 09.7	100.5 09.9	101.5 10.0	102.5 10.1	103.5 10.2	104.5 10.2	105.5 10.2	106.5 10.2	107.5 10.2	108.5 10.2	109.5 10.2	110.5 10.2	99
99	95.9 14.2	96.9 14.4	97.9 14.5	98.9 14.7	99.9 14.8	100.9 15.0	101.9 15.1	102.9 15.3	103.9 15.3	104.9 15.3	105.9 15.3	106.9 15.3	107.9 15.3	108.9 15.3	109.9 15.3	100
100	95.1 18.9	96.1 19.1	97.1 19.3	98.1 19.5	99.1 19.7	100.0 19.9	101.0 20.1	102.0 20.3	103.0 20.3	104.0 20.3	105.0 20.3	106.0 20.3	107.0 20.3	108.0 20.3	109.0 20.3	101
101	94.1 23.6	95.1 23.8	96.0 24.1	97.0 24.3	98.0 24.5	98.9 24.8	99.9 25.0	100.9 25.3	101.9 25.3	102.9 25.3	103.9 25.3	104.9 25.3	105.9 25.3	106.9 25.3	107.9 25.3	102
102	92.8 28.2	93.8 28.4	94.7 28.7	95.7 29.0	96.7 29.3	97.6 29.6	98.6 29.9	99.5 29.9	100.5 29.9	101.5 29.9	102.5 29.9	103.5 29.9	104.5 29.9	105.5 29.9	106.5 29.9	103
103	91.3 32.7	92.3 33.0	93.2 33.3	94.2 33.7	95.1 34.0	96.0 34.4	97.0 34.7	97.9 34.7	98.9 34.7	99.9 34.7	100.9 34.7	101.9 34.7	102.9 34.7	103.9 34.7	104.9 34.7	104
104	89.6 37.1	90.5 37.5	91.5 37.9	92.4 38.3	93.3 38.7	94.2 39.0	95.2 39.4	96.1 39.8	97.0 39.8	98.0 39.8	99.0 39.8	100.0 39.8	101.0 39.8	102.0 39.8	103.0 39.8	105
105	87.7 41.5	88.6 41.9	89.5 42.3	90.4 42.8	91.3 43.2	92.2 43.6	93.1 44.0	94.0 44.5	95.0 44.5	96.0 44.5	97.0 44.5	98.0 44.5	99.0 44.5	100.0 44.5	101.0 44.5	106
106	85.6 45.7	86.5 46.2	87.3 46.7	88.2 47.1	89.1 47.6	90.0 48.1	90.8 48.5	91.7 49.0	92.6 49.0	93.5 49.0	94.4 49.0	95.3 49.0	96.2 49.0	97.1 49.0	98.0 49.0	107
107	83.5 49.9	84.4 50.4	85.3 50.9	86.2 51.4	87.1 51.9	88.0 52.4	88.8 52.9	89.7 53.5	90.6 53.5	91.5 53.5	92.4 53.5	93.3 53.5	94.2 53.5	95.1 53.5	96.0 53.5	108
108	81.4 53.9	82.3 54.4	83.2 55.0	84.1 55.6	85.0 56.1	85.8 56.7	86.7 57.2	87.6 57.8	88.5 57.8	89.4 57.8	90.3 57.8	91.2 57.8	92.1 57.8	93.0 57.8	93.9 57.8	109
109	79.3 57.8	80.2 58.4	81.1 59.0	82.0 59.6	82.9 60.2	83.8 60.8	84.7 61.4	85.6 62.0	86.5 62.0	87.4 62.0	88.3 62.0	89.2 62.0	90.1 62.0	91.0 62.0	91.9 62.0	110
110	77.2 61.5	78.1 62.2	79.0 62.8	80.0 63.4	80.9 64.1	81.8 64.7	82.7 65.3	83.6 65.9	84.5 65.9	85.4 65.9	86.3 65.9	87.2 65.9	88.1 65.9	89.0 65.9	90.0 65.9	111
111	75.1 65.1	76.0 65.8	76.9 66.5	77.8 67.2	78.7 67.9	79.6 68.5	80.5 69.2	81.4 69.8	82.3 69.8	83.2 69.8	84.1 69.8	85.0 69.8	85.9 69.8	86.8 69.8	87.7 69.8	112
112	73.0 68.6	73.9 69.3	74.8 70.0	75.7 70.7	76.6 71.4	77.5 72.1	78.4 72.8	79.3 73.5	80.2 73.5	81.1 73.5	82.0 73.5	82.9 73.5	83.8 73.5	84.7 73.5	85.6 73.5	113
113	70.9 72.1	71.8 72.8	72.7 73.5	73.6 74.2	74.5 74.9	75.4 75.6	76.3 76.3	77.2 77.0	78.1 77.0	79.0 77.0	79.9 77.0	80.8 77.0	81.7 77.0	82.6 77.0	83.5 77.0	114
114	68.8 75.6	69.7 76.3	70.6 77.0	71.5 77.7	72.4 78.4	73.3 79.1	74.2 79.8	75.1 80.5	76.0 81.2	76.9 81.9	77.8 82.6	78.7 83.3	79.6 84.0	80.5 84.7	81.4 85.4	115
115	66.7 79.1	67.6 79.8	68.5 80.5	69.4 81.2	70.3 81.9	71.2 82.6	72.1 83.3	73.0 84.0	73.9 84.7	74.8 85.4	75.7 86.1	76.6 86.8	77.5 87.5	78.4 88.2	79.3 88.9	116
116	64.6 82.6	65.5 83.3	66.4 84.0	67.3 84.7	68.2 85.4	69.1 86.1	70.0 86.8	70.9 87.5	71.8 88.2	72.7 88.9	73.6 89.6	74.5 90.3	75.4 91.0	76.3 91.7	77.2 92.4	117
117	62.5 86.1	63.4 86.8	64.3 87.5	65.2 88.2	66.1 88.9	67.0 89.6	67.9 90.3	68.8 91.0	69.7 91.7	70.6 92.4	71.5 93.1	72.4 93.8	73.3 94.5	74.2 95.2	75.1 95.9	118
118	60.4 89.6	61.3 90.3	62.2 91.0	63.1 91.7	64.0 92.4	64.9 93.1	65.8 93.8	66.7 94.5	67.6 95.2	68.5 95.9	69.4 96.6	70.3 97.3	71.2 98.0	72.1 98.7	73.0 99.4	119
119	58.3 93.1	59.2 93.8	60.1 94.5	61.0 95.2	61.9 95.9	62.8 96.6	63.7 97.3	64.6 98.0	65.5 98.7	66.4 99.4	67.3 100.1	68.2 100.8	69.1 101.5	70.0 102.2	70.9 102.9	120
120	56.2 96.6	57.1 97.3	58.0 98.0	58.9 98.7	59.8 99.4	60.7 100.1	61.6 100.8	62.5 101.5	63.4 102.2	64.3 102.9	65.2 103.6	66.1 104.3	67.0 105.0	67.9 105.7	68.8 106.4	121
121	54.1 100.1	55.0 100.8	55.9 101.5	56.8 102.2	57.7 102.9	58.6 103.6	59.5 104.3	60.4 105.0	61.3 105.7	62.2 106.4	63.1 107.1	64.0 107.8	64.9 108.5	65.8 109.2	66.7 109.9	122
122	52.0 103.6	52.9 104.3	53.8 105.0	54.7 105.7	55.6 106.4	56.5 107.1	57.4 107.8	58.3 108.5	59.2 109.2	60.1 109.9	61.0 110.6	61.9 111.3	62.8 112.0	63.7 112.7	64.6 113.4	123
123	50.0 107.1	50.9 107.8	51.8 108.5	52.7 109.2	53.6 110.0	54.5 110.7	55.4 111.4	56.3 112.1	57.2 112.8	58.1 113.5	59.0 114.2	59.9 114.9	60.8 115.6	61.7 116.3	62.6 117.0	124
124	47.9 110.6	48.8 111.3	49.7 112.0	50.6 112.7	51.5 113.4	52.4 114.1	53.3 114.8	54.2 115.5	55.1 116.2	56.0 116.9	56.9 117.6	57.8 118.3	58.7 119.0	59.6 119.7	60.5 120.4	125
125	45.8 114.1	46.7 114.8	47.6 115.5	48.5 116.2	49.4 116.9	50.3 117.6	51.2 118.3	52.1 119.0	53.0 119.7	53.9 120.4	54.8 121.1	55.7 121.8	56.6 122.5	57.5 123.2	58.4 123.9	126
126	43.7 117.6	44.6 118.3	45.5 119.0	46.4 119.7	47.3 120.4	48.2 121.1	49.1 121.8	50.0 122.5	50.9 123.2	51.8 123.9	52.7 124.6	53.6 125.3	54.5 126.0	55.4 126.7	56.3 127.4	127
127	41.6 121.1	42.5 121.8	43.4 122.5	44.3 123.2	45.2 123.9	46.1 124.6	47.0 125.3	47.9 126.0	48.8 126.7	49.7 127.4	50.6 128.1	51.5 128.8	52.4 129.5	53.3 130.2	54.2 130.9	128
128	39.5 124.6	40.4 125.3	41.3 126.0	42.2 126.7	43.1 127.4	44.0 128.1	44.9 128.8	45.8 129.5	46.7 130.2	47.6 130.9	48.5 131.6	49.4 132.3	50.3 133.0	51.2 133.7	52.1 134.4	129
129	37.4 128.1	38.3 128.8	39.2 129.5	40.1 130.2	41.0 130.9	41.9 131.6	42.8 132.3	43.7 133.0	44.6 133.7	45.5 134.4	46.4 135.1	47.3 135.8	48.2 136.5	49.1 137.2	50.0 137.9	130
130	35.3 131.6	36.2 132.3	37.1 133.0	38.0 133.7	38.9 134.4	39.8 135.1	40.7 135.8	41.6 136.5	42.5 137.2	43.4 137.9	44.3 138.6	45.2 139.3	46.1 140.0	47.0 140.7	47.9 141.4	131
131	33.2 135.1	34.1 135.8	35.0 136.5	35.9 137.2	36.8 137.9	37.7 138.6	38.6 139.3	39.5 140.0	40.4 140.7	41.3 141.4	42.2 142.1	43.1 142.8	44.0 143.5	44.9 144.2	45.8 144.9	132
132	31.1 138.6	32.0 139.3	32.9 140.0	33.8 140.7	34.7 141.4	35.6 142.1	36.5 142.8	37.4 143.5	38.3 144.2	39.2 144.9	40.1 145.6	41.0 146.3	41.9 147.0	42.8 147.7	43.7 148.4	133
133	29.0 142.1	29.9 142.8	30.8 143.5	31.7 144.2	32.6 144.9	33.5 145.6	34.4 146.3	35.3 147.0	36.2 147.7	37.1 148.4	38.0 149.1	38.9 149.8	39.8 150.5	40.7 151.2	41.6 151.9	134
134	26.9 145.6	27.8 146.3	28.7 147.0	29.6 147.7	30.5 148.4	31.4 149.1	32.3 149.8	33.2 150.5	34.1 151.2	35.0 151.9	35.9 152.6	36.8 153.3	37.7 154.0	38.6 154.7	39.5 155.4	135
135	24.8 149.1	25.7 149.8	26.6 150.5	27.5 151.2	28.4 151.9	29.3 152.6	30.2 153.3	31.1 154.0	32.0 154.7	32.9 155.4	33.8 156.1	34.7 156.8	35.6 157.5	36.5 158.2	37.4 158.9	136
136	22.7 152.6	23.6 153.3	24.5 154.0	25.4 154.7	26.3 155.4	27.2 156.1	28.1 156.8	29.0 157.5	29.9 158.2	30.8 158.9	31.7 159.6	32.6 160.3	33.5 161.0	34.4 161.7	35.3 162.4	137
137	20.6 156.1	21.5 156.8	22.4 157.5	23.3 158.2	24.2 158.9	25.1 159.6	26.0 160.3	26.9 161.0	27.8 161.7	28.7 162.4	29.6 163.1	30.5 163.8	31.4 164.5	32.3 165.2	33.2 165.9	138
138	18.5 159.6	19.4 160.3	20.3 161.0	21.2 161.7	22.1 162.4	23.0 163.1	23.9 163.8	24.8 164.5	25.7 165.2	26.6 165.9	27.5 166.6	28.4 167.3	29.3 168.0	30.2 168.7	31.1 169.4	139
139	16.4 163.1	17.3 163.8	18.2 164.5	19.1 165.2	20.0 165.9	20.9 166.6	21.8 167.3	22.7 168.0	23.6 168.7	24.5 169.4	25.4 170.1	26.3 170.8	27.2 171.5	28.1 172.2	29.0 172.9	140
140	14.3 166.6	15.2 167.3	16.1 168.0	17.0 168.7	17.9 169.4	18.8 170.1	19.7 170.8	20.6 171.5	21.5 172.2	22.4 172.9	23.3 173.6	24.2 174.3	25.1 175.0	26.0 175.7	26.9 176.4	141
141	12.2 170.1	13.1 170.8	14.0 171.5	14.9 172.2	15.8 172.9	16.7 173.6	17.6 174.3	18.5 175.0	19.4 175.7	20.3 176.4	21.2 177.1	22.1 177.8	23.0 178.5	23.9 179.2	24.8 179.9	142
142	10.1 173.6	11.0 174.3	11.9 175.0	12.8 175.7	13.7 176.4	14.6 177.1	15.5 177.8	16.4 178.5	17.3 179.2	18.2 179.9	19.1 180.6	20.0 181.3	20.9 182.0	21.8 182.7	22.7 183.4	143
143	8.0 177.1	8.9 177.8	9.8 178.5	10.7 179.2	11.6 179.9	12.5 180.6	13.4 181.3	14.3 182.0	15.2 182.7	16.1 183.4	17.0 184.1	17.9 184.8	18.8 185.5	19.7 186.2	20.6 186.9	144
144	5.9 180.6	6.8 181.3	7.7 182.0	8.6 182.7	9.5 183.4	10.4 184.1	11.3 184.8	12.2 185.5	13.1 186.2	14.0 186.9	14.9 187.6	15.8 188.3	16.7 189.0	17.6 189.7	18.5 190.4	145
145	3.8 184.1	4.7 184.8	5.6 185.5	6.5 186.2	7.4 186.9	8.3 187.6	9.2 188.3	10.1 189.0	11.0 189.7	11.9 190.4	12.8 191.1	13.7 191.8	14.6 192.5	15.5 193.2	16.4 193.9	146
146	1.7 187.6	2.6														

Traverse Table.

(x.)

Distance. 105		106		107		108		109		110		111		112		Crs.
Dist. Lat. | Dep.	Dist. Lat. | Dep.	Dist. Lat. | Dep.	Dist. Lat. | Dep.	Dist. Lat. | Dep.	Dist. Lat. | Dep.	Dist. Lat. | Dep.	Dist. Lat. | Dep.	Dist. Lat. | Dep.	Dist. Lat. | Dep.	Dist. Lat. | Dep.	Dist. Lat. | Dep.	Dist. Lat. | Dep.	Dist. Lat. | Dep.	Dist. Lat. | Dep.	Dist. Lat. | Dep.	
104.9 05.2	105.9 05.1	106.9 05.3	107.9 05.3	108.9 05.4	109.9 05.4	110.9 05.5	111.9 05.5	112.9 05.5	113.9 05.5	114.9 05.5	115.9 05.5	116.9 05.5	117.9 05.5	118.9 05.5	119.9 05.5	120.9 05.5
04.5 10.3	05.5 10.1	06.5 10.5	07.5 10.5	08.5 10.6	09.5 10.7	10.5 10.8	11.5 10.8	12.5 10.8	13.5 10.8	14.5 10.8	15.5 10.8	16.5 10.8	17.5 10.8	18.5 10.8	19.5 10.8	20.5 10.8
103.9 15.4	104.8 15.3	105.8 15.3	106.8 15.3	107.8 15.3	108.8 15.3	109.8 15.3	110.8 15.3	111.8 15.3	112.8 15.3	113.8 15.3	114.8 15.3	115.8 15.3	116.8 15.3	117.8 15.3	118.8 15.3	119.8 15.3
103.0 20.5	104.0 20.7	104.9 20.9	105.9 21.1	106.9 21.3	107.9 21.3	108.9 21.3	109.9 21.3	110.9 21.3	111.9 21.3	112.9 21.3	113.9 21.3	114.9 21.3	115.9 21.3	116.9 21.3	117.9 21.3	118.9 21.3
101.9 25.5	102.8 25.8	103.8 26.0	104.8 26.2	105.7 26.3	106.7 26.3	107.7 26.3	108.7 26.3	109.7 26.3	110.7 26.3	111.7 26.3	112.7 26.3	113.7 26.3	114.7 26.3	115.7 26.3	116.7 26.3	117.7 26.3
100.5 30.5	101.4 30.8	102.4 31.1	103.4 31.4	104.3 31.6	105.3 31.6	106.3 31.6	107.3 31.6	108.3 31.6	109.3 31.6	110.3 31.6	111.3 31.6	112.3 31.6	113.3 31.6	114.3 31.6	115.3 31.6	116.3 31.6
98.9 35.4	99.8 35.7	100.7 36.0	101.7 36.4	102.6 36.7	103.6 37.1	104.5 37.4	105.4 37.7	106.3 38.0	107.2 38.3	108.1 38.6	109.0 38.9	109.9 39.2	110.8 39.5	111.7 39.8	112.6 40.1	113.5 40.4
97.0 40.2	97.9 40.6	98.9 41.0	99.8 41.3	100.7 41.7	101.6 42.1	102.5 42.4	103.4 42.7	104.3 43.0	105.2 43.3	106.1 43.6	107.0 43.9	107.9 44.2	108.8 44.5	109.7 44.8	110.6 45.1	111.5 45.4
94.9 44.9	95.8 45.3	96.7 45.8	97.6 46.2	98.5 46.6	99.4 47.0	100.3 47.3	101.2 47.6	102.1 47.9	103.0 48.2	103.9 48.5	104.8 48.8	105.7 49.1	106.6 49.4	107.5 49.7	108.4 50.0	109.3 50.3
92.6 49.5	93.5 50.0	94.4 50.4	95.3 50.9	96.1 51.4	97.0 51.8	97.9 52.1	98.8 52.4	99.7 52.7	100.6 53.0	101.5 53.3	102.4 53.6	103.3 53.9	104.2 54.2	105.1 54.5	106.0 54.8	106.9 55.1
90.1 54.0	90.9 54.5	91.8 55.0	92.6 55.5	93.5 56.0	94.3 56.5	95.2 56.9	96.1 57.3	97.0 57.7	97.9 58.1	98.8 58.5	99.7 58.9	100.6 59.3	101.5 59.7	102.4 60.1	103.3 60.5	104.2 60.9
87.3 58.3	88.1 58.9	89.0 59.4	89.8 59.8	90.7 60.3	91.5 60.7	92.4 61.1	93.3 61.5	94.2 61.9	95.1 62.3	96.0 62.7	96.9 63.1	97.8 63.5	98.7 63.9	99.6 64.3	100.5 64.7	101.4 65.1
84.3 62.6	85.1 63.1	85.9 63.7	86.7 64.2	87.5 64.6	88.4 65.0	89.3 65.4	90.2 65.8	91.1 66.2	92.0 66.6	92.9 67.0	93.8 67.4	94.7 67.8	95.6 68.2	96.5 68.6	97.4 69.0	98.3 69.4
81.2 66.6	81.9 67.2	82.7 67.9	83.5 68.5	84.3 69.1	85.0 69.6	85.8 70.0	86.6 70.4	87.4 70.8	88.2 71.2	89.0 71.6	89.8 72.0	90.6 72.4	91.4 72.8	92.2 73.2	93.0 73.6	93.8 74.0
77.9 70.5	78.5 71.2	79.3 71.8	80.0 72.5	80.8 73.2	81.5 73.9	82.2 74.5	83.0 75.2	83.8 75.9	84.6 76.6	85.4 77.3	86.2 78.0	87.0 78.7	87.8 79.4	88.6 80.1	89.4 80.8	90.2 81.5
74.2 74.2	75.0 75.0	75.7 75.7	76.4 76.4	77.1 77.1	77.8 77.8	78.5 78.5	79.2 79.2	79.9 79.9	80.6 80.6	81.3 81.3	82.0 82.0	82.7 82.7	83.4 83.4	84.1 84.1	84.8 84.8	85.5 85.5
105.0 01.8	106.0 01.8	107.0 01.9	108.0 01.9	109.0 01.9	110.0 01.9	111.0 01.9	112.0 01.9	113.0 01.9	114.0 01.9	115.0 01.9	116.0 01.9	117.0 01.9	118.0 01.9	119.0 01.9	120.0 01.9	121.0 01.9
104.9 03.7	105.9 03.7	106.9 03.7	107.9 03.8	108.9 03.8	109.9 03.8	110.9 03.8	111.9 03.8	112.9 03.8	113.9 03.8	114.9 03.8	115.9 03.8	116.9 03.8	117.9 03.8	118.9 03.8	119.9 03.8	120.9 03.8
104.9 05.5	105.9 05.5	106.9 05.6	107.9 05.7	108.9 05.7	109.9 05.7	110.9 05.7	111.9 05.7	112.9 05.7	113.9 05.7	114.9 05.7	115.9 05.7	116.9 05.7	117.9 05.7	118.9 05.7	119.9 05.7	120.9 05.7
104.7 07.3	105.7 07.4	106.7 07.5	107.7 07.5	108.7 07.6	109.7 07.6	110.7 07.6	111.7 07.6	112.7 07.6	113.7 07.6	114.7 07.6	115.7 07.6	116.7 07.6	117.7 07.6	118.7 07.6	119.7 07.6	120.7 07.6
104.6 09.2	105.6 09.2	106.6 09.3	107.6 09.4	108.6 09.5	109.6 09.5	110.6 09.5	111.6 09.5	112.6 09.5	113.6 09.5	114.6 09.5	115.6 09.5	116.6 09.5	117.6 09.5	118.6 09.5	119.6 09.5	120.6 09.5
104.1 11.0	105.1 11.1	106.1 11.2	107.1 11.3	108.1 11.4	109.1 11.4	110.1 11.4	111.1 11.4	112.1 11.4	113.1 11.4	114.1 11.4	115.1 11.4	116.1 11.4	117.1 11.4	118.1 11.4	119.1 11.4	120.1 11.4
104.2 12.8	105.2 12.9	106.2 13.0	107.2 13.2	108.2 13.3	109.2 13.4	110.2 13.4	111.2 13.4	112.2 13.4	113.2 13.4	114.2 13.4	115.2 13.4	116.2 13.4	117.2 13.4	118.2 13.4	119.2 13.4	120.2 13.4
104.0 14.6	105.0 14.8	106.0 14.9	107.0 15.0	108.0 15.2	109.0 15.3	110.0 15.3	111.0 15.3	112.0 15.3	113.0 15.3	114.0 15.3	115.0 15.3	116.0 15.3	117.0 15.3	118.0 15.3	119.0 15.3	120.0 15.3
103.7 16.4	104.7 16.6	105.7 16.7	106.7 16.9	107.7 17.1	108.7 17.2	109.7 17.2	110.7 17.2	111.7 17.2	112.7 17.2	113.7 17.2	114.7 17.2	115.7 17.2	116.7 17.2	117.7 17.2	118.7 17.2	119.7 17.2
103.4 18.2	104.4 18.4	105.4 18.6	106.4 18.8	107.4 19.0	108.4 19.1	109.4 19.1	110.4 19.1	111.4 19.1	112.4 19.1	113.4 19.1	114.4 19.1	115.4 19.1	116.4 19.1	117.4 19.1	118.4 19.1	119.4 19.1
103.1 20.0	104.1 20.2	105.1 20.4	106.1 20.6	107.1 20.8	108.1 20.9	109.1 20.9	110.1 20.9	111.1 20.9	112.1 20.9	113.1 20.9	114.1 20.9	115.1 20.9	116.1 20.9	117.1 20.9	118.1 20.9	119.1 20.9
102.7 21.8	103.7 22.0	104.7 22.2	105.7 22.5	106.7 22.7	107.7 22.9	108.7 23.1	109.7 23.3	110.7 23.5	111.7 23.7	112.7 23.9	113.7 24.1	114.7 24.3	115.7 24.5	116.7 24.7	117.7 24.9	118.7 25.1
102.3 23.6	103.3 23.8	104.3 24.1	105.3 24.3	106.3 24.5	107.3 24.7	108.3 24.9	109.3 25.1	110.3 25.3	111.3 25.5	112.3 25.7	113.3 25.9	114.3 26.1	115.3 26.3	116.3 26.5	117.3 26.7	118.3 26.9
101.9 25.4	102.9 25.6	103.9 25.9	104.9 26.1	105.9 26.4	106.9 26.6	107.9 26.8	108.9 27.0	109.9 27.2	110.9 27.4	111.9 27.6	112.9 27.8	113.9 28.0	114.9 28.2	115.9 28.4	116.9 28.6	117.9 28.8
101.4 27.2	102.4 27.4	103.4 27.7	104.4 28.0	105.4 28.2	106.4 28.5	107.4 28.7	108.4 29.0	109.4 29.2	110.4 29.4	111.4 29.6	112.4 29.8	113.4 30.0	114.4 30.2	115.4 30.4	116.4 30.6	117.4 30.8
100.9 28.9	101.9 29.2	102.9 29.5	103.9 29.8	104.9 30.0	105.9 30.3	106.9 30.6	107.9 30.8	108.9 31.1	109.9 31.3	110.9 31.5	111.9 31.7	112.9 31.9	113.9 32.1	114.9 32.3	115.9 32.5	116.9 32.7
100.4 30.7	101.4 31.0	102.4 31.3	103.4 31.6	104.4 31.9	105.4 32.2	106.4 32.5	107.4 32.8	108.4 33.1	109.4 33.4	110.4 33.7	111.4 34.0	112.4 34.3	113.4 34.6	114.4 34.9	115.4 35.2	116.4 35.5
99.9 32.4	100.9 32.8	101.9 33.1	102.9 33.4	103.9 33.7	104.9 34.0	105.9 34.3	106.9 34.6	107.9 34.9	108.9 35.2	109.9 35.5	110.9 35.8	111.9 36.1	112.9 36.4	113.9 36.7	114.9 37.0	115.9 37.3
99.3 34.2	100.3 34.5	101.3 34.8	102.3 35.2	103.3 35.5	104.3 35.8	105.3 36.1	106.3 36.4	107.3 36.7	108.3 37.0	109.3 37.3	110.3 37.6	111.3 37.9	112.3 38.2	113.3 38.5	114.3 38.8	115.3 39.1
98.7 35.9	99.7 36.3	100.7 36.6	101.7 36.9	102.7 37.3	103.7 37.6	104.7 37.9	105.7 38.2	106.7 38.5	107.7 38.8	108.7 39.1	109.7 39.4	110.7 39.7	111.7 40.0	112.7 40.3	113.7 40.6	114.7 40.9
98.0 37.6	99.0 38.0	100.0 38.3	101.0 38.6	102.0 38.9	103.0 39.2	104.0 39.5	105.0 39.8	106.0 40.1	107.0 40.4	108.0 40.7	109.0 41.0	110.0 41.3	111.0 41.6	112.0 41.9	113.0 42.2	114.0 42.5
97.4 39.3	98.3 39.7	99.3 39.9	100.3 40.1	101.3 40.4	102.3 40.7	103.3 41.0	104.3 41.3	105.3 41.6	106.3 41.9	107.3 42.2	108.3 42.5	109.3 42.8	110.3 43.1	111.3 43.4	112.3 43.7	113.3 44.0
96.7 41.0	97.6 41.4	98.6 41.8	99.6 42.1	100.6 42.4	101.6 42.7	102.6 43.0	103.6 43.3	104.6 43.6	105.6 43.9	106.6 44.2	107.6 44.5	108.6 44.8	109.6 45.1	110.6 45.4	111.6 45.7	112.6 46.0
95.9 42.7	96.8 43.1	97.8 43.5	98.8 43.8	99.8 44.1	100.8 44.4	101.8 44.7	102.8 45.0	103.8 45.3	104.8 45.6	105.8 45.9	106.8 46.2	107.8 46.5	108.8 46.8	109.8 47.1	110.8 47.4	111.8 47.7
95.2 44.4	96.1 44.8	97.0 45.2	97.9 45.6	98.8 46.0	99.7 46.4	100.7 46.8	101.7 47.1	102.7 47.5	103.7 47.8	104.7 48.2	105.7 48.5	106.7 48.8	107.7 49.1	108.7 49.4	109.7 49.7	110.7 50.0
94.4 46.0	95.3 46.5	96.2 46.9	97.1 47.3	98.0 47.7	98.9 48.1	99.8 48.5	100.8 48.8	101.8 49.2	102.8 49.5	103.8 49.8	104.8 50.1	105.8 50.4	106.8 50.7	107.8 51.0	108.8 51.3	109.8 51.6
93.6 47.7	94.4 48.1	95.3 48.6	96.2 49.0	97.1 49.5	98.0 49.9	98.9 50.3	99.8 50.7	100.8 51.0	101.8 51.4	102.8 51.7	103.8 52.0	104.8 52.3	105.8 52.6	106.8 52.9	107.8 53.2	108.8 53.5
92.7 49.3	93.6 49.8	94.5 50.2	95.4 50.7	96.3 51.2	97.2 51.6	98.1 52.0	99.0 52.4	99.9 52.8	100.9 53.1	101.8 53.5	102.8 53.8	103.7 54.1	104.7 54.4	105.6 54.7	106.6 55.0	107.5 55.3
91.8 50.9	92.7 51.4	93.6 51.9	94.5 52.4	95.4 52.8	96.3 53.2	97.2 53.6	98.1 54.0	99.0 54.4	99.9 54.8	100.9 55.1	101.8 55.5	102.8 55.8	103.7 56.1	104.7 56.4	105.6 56.7	106.6 57.0
90.9 52.5	91.8 53.0	92.7 53.5	93.6 54.0	94.5 54.4	95.4 54.8	96.3 55.2	97.2 55.6	98.1 56.0	99.0 56.4	99.9 56.8	100.9 57.1	101.8 57.5	102.8 57.8	103.7 58.1	104.7 58.4	105.6 58.7
90.0 54.1	90.9 5															

Traverse Table.

(x.)

Distance.	113	114	115	116	117	118	119	120	
Dist.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Course.
1	112.9 05.5	113.9 05.6	114.9 05.6	115.9 05.7	116.9 05.7	117.9 05.8	118.9 05.8	119.9 05.9	79° 45'
2	112.5 11.1	113.5 11.2	114.4 11.3	115.4 11.4	116.4 11.5	117.4 11.6	118.4 11.7	119.4 11.8	79° 30'
3	111.8 16.6	112.8 16.7	113.7 16.9	114.7 17.0	115.7 17.2	116.7 17.3	117.7 17.5	118.7 17.6	79° 15'
4	110.8 22.0	111.8 22.2	112.8 22.4	113.8 22.6	114.7 22.8	115.7 23.0	116.7 23.2	117.7 23.4	79° 00'
5	109.8 27.5	110.6 27.7	111.6 27.9	112.5 28.2	113.5 28.4	114.5 28.7	115.4 28.9	116.4 29.2	78° 45'
6	108.1 32.8	109.1 33.1	110.1 33.4	111.0 33.7	112.0 34.0	112.9 34.2	113.9 34.5	114.8 34.8	78° 30'
7	106.4 38.1	107.3 38.4	108.3 38.7	109.2 39.1	110.2 39.4	111.1 39.7	112.0 40.1	113.0 40.4	78° 15'
8	104.4 43.2	105.3 43.6	106.3 44.0	107.2 44.4	108.1 44.8	109.0 45.2	109.9 45.5	110.9 45.9	78° 00'
9	102.1 48.3	103.1 48.7	104.0 49.2	104.9 49.6	105.8 50.0	106.7 50.5	107.6 50.9	108.5 51.3	77° 45'
10	99.7 53.3	100.5 53.7	101.4 54.2	102.3 54.7	103.2 55.1	104.1 55.6	105.0 56.1	105.8 56.6	77° 30'
11	96.9 58.1	97.8 58.6	98.6 59.1	99.5 59.6	100.4 60.1	101.2 60.7	102.1 61.2	102.9 61.7	77° 15'
12	94.0 62.8	94.8 63.3	95.6 63.9	96.4 64.4	97.3 65.0	98.1 65.6	98.9 66.1	99.8 66.7	77° 00'
13	90.8 67.7	91.6 67.9	92.4 68.5	93.2 69.1	94.0 69.7	94.8 70.3	95.6 70.9	96.4 71.5	76° 45'
14	87.3 71.7	88.1 72.3	88.9 73.0	89.7 73.6	90.4 74.2	91.2 74.9	92.0 75.5	92.8 76.1	76° 30'
15	83.7 75.9	84.5 76.5	85.2 77.2	85.9 77.9	86.7 78.6	87.4 79.2	88.2 79.9	88.9 80.6	76° 15'
16	79.9 79.9	80.6 80.6	81.3 81.3	82.0 82.0	82.7 82.7	83.4 83.4	84.1 84.1	84.8 84.8	76° 00'
17	113.0 02.0	114.0 02.0	115.0 02.0	116.0 02.0	117.0 02.0	118.0 02.1	119.0 02.1	120.0 02.1	89° 45'
18	112.9 03.9	113.9 04.0	114.9 04.0	115.9 04.0	116.9 04.1	117.9 04.1	118.9 04.2	119.9 04.2	89° 30'
19	112.8 05.9	113.8 06.0	114.8 06.0	115.8 06.1	116.8 06.1	117.8 06.2	118.8 06.2	119.8 06.3	89° 15'
20	112.7 07.9	113.7 08.0	114.7 08.0	115.7 08.1	116.7 08.2	117.7 08.2	118.7 08.3	119.7 08.4	89° 00'
21	112.6 09.8	113.6 09.9	114.6 10.0	115.6 10.1	116.6 10.2	117.6 10.3	118.5 10.4	119.5 10.5	88° 45'
22	112.4 11.8	113.4 11.9	114.4 12.0	115.4 12.1	116.4 12.2	117.4 12.3	118.3 12.4	119.3 12.5	88° 30'
23	112.2 13.8	113.2 13.9	114.1 14.0	115.1 14.1	116.1 14.3	117.1 14.4	118.1 14.5	119.1 14.6	88° 15'
24	111.9 15.7	112.9 15.9	113.9 16.0	114.9 16.1	115.9 16.3	116.9 16.4	117.8 16.6	118.8 16.7	88° 00'
25	111.6 17.7	112.6 17.8	113.6 18.0	114.6 18.1	115.6 18.3	116.5 18.5	117.5 18.6	118.5 18.8	87° 45'
26	111.3 19.6	112.3 19.8	113.3 20.0	114.2 20.1	115.2 20.3	116.2 20.5	117.2 20.7	118.2 20.8	87° 30'
27	110.9 21.6	111.9 21.8	112.9 22.1	113.9 22.1	114.9 22.3	115.8 22.5	116.8 22.7	117.8 22.9	87° 15'
28	110.5 23.5	111.5 23.7	112.5 23.9	113.5 24.1	114.4 24.3	115.4 24.5	116.4 24.7	117.4 24.9	87° 00'
29	110.1 25.4	111.1 25.6	112.1 25.9	113.0 26.1	114.0 26.3	115.0 26.5	116.0 26.8	116.9 27.0	86° 45'
30	109.6 27.3	110.6 27.6	111.6 27.8	112.6 28.1	113.5 28.3	114.5 28.6	115.5 28.8	116.4 29.0	86° 30'
31	109.1 29.2	110.1 29.5	111.1 29.8	112.0 30.0	113.0 30.3	114.0 30.5	114.9 30.8	115.9 31.1	86° 15'
32	108.6 31.1	109.6 31.4	110.5 31.7	111.5 32.0	112.5 32.2	113.4 32.5	114.4 32.8	115.4 33.1	86° 00'
33	108.1 33.0	109.0 33.3	110.0 33.6	110.9 33.9	111.9 34.2	112.8 34.5	113.8 34.8	114.8 35.1	85° 45'
34	107.5 34.9	108.4 35.2	109.4 35.5	110.3 35.8	111.3 36.2	112.2 36.5	113.2 36.8	114.1 37.1	85° 30'
35	106.8 36.8	107.8 37.1	108.7 37.4	109.7 37.8	110.6 38.1	111.6 38.4	112.5 38.7	113.5 39.1	85° 15'
36	106.2 38.6	107.1 39.0	108.1 39.3	109.0 39.7	109.9 40.0	110.9 40.4	111.8 40.7	112.8 41.0	85° 00'
37	105.5 40.5	106.4 40.9	107.4 41.2	108.3 41.6	109.2 41.9	110.2 42.3	111.1 42.6	112.0 43.0	84° 45'
38	104.8 42.3	105.7 42.7	106.6 43.1	107.6 43.5	108.5 43.8	109.4 44.2	110.3 44.6	111.3 45.0	84° 30'
39	104.0 44.2	104.9 44.5	105.9 44.9	106.8 45.3	107.7 45.7	108.6 46.1	109.5 46.5	110.5 46.9	84° 15'
40	103.2 46.0	104.1 46.4	105.1 46.8	106.0 47.2	106.9 47.6	107.8 48.0	108.7 48.4	109.6 48.8	84° 00'
41	102.4 47.8	103.3 48.2	104.2 48.6	105.1 49.0	106.0 49.4	106.9 49.9	107.9 50.3	108.8 50.7	83° 45'
42	101.6 49.5	102.5 50.0	103.4 50.4	104.3 50.9	105.2 51.3	106.1 51.7	107.0 52.2	107.9 52.6	83° 30'
43	100.7 51.3	101.6 51.8	102.5 52.2	103.4 52.7	104.2 53.1	105.1 53.6	106.0 54.0	106.9 54.5	83° 15'
44	99.8 53.1	100.7 53.5	101.6 54.0	102.4 54.5	103.3 54.9	104.2 55.4	105.1 55.9	106.0 56.3	83° 00'
45	98.8 54.8	99.7 55.3	100.6 55.8	101.5 56.2	102.3 56.7	103.2 57.2	104.1 57.7	105.0 58.2	82° 45'
46	97.9 56.5	98.7 57.0	99.6 57.5	100.5 58.0	101.3 58.5	102.2 59.0	103.1 59.5	104.0 60.0	82° 30'
47	96.9 58.2	97.7 58.7	98.6 59.2	99.4 59.7	100.3 60.3	101.1 60.8	102.0 61.3	102.9 61.8	82° 15'
48	95.8 59.9	96.7 60.4	97.5 60.9	98.4 61.5	99.2 62.0	100.1 62.5	100.9 63.1	101.8 63.6	82° 00'
49	94.8 61.5	95.6 62.1	96.4 62.6	97.3 63.2	98.1 63.7	99.0 64.3	99.8 64.8	100.6 65.4	81° 45'
50	93.7 63.2	94.5 63.7	95.3 64.3	96.2 64.9	97.0 65.4	97.8 66.0	98.7 66.5	99.5 67.1	81° 30'
51	92.6 64.8	93.4 65.4	94.2 66.0	95.0 66.5	95.8 67.1	96.7 67.7	97.5 68.3	98.3 68.8	81° 15'
52	91.4 66.4	92.2 67.0	93.0 67.6	93.8 68.2	94.7 68.8	95.5 69.4	96.3 69.9	97.1 70.5	81° 00'
53	90.2 68.0	91.0 68.6	91.8 69.2	92.6 69.8	93.4 70.4	94.2 71.0	95.0 71.6	95.8 72.2	80° 45'
54	89.0 69.6	89.9 70.2	90.6 70.8	91.4 71.4	92.2 72.0	93.0 72.6	93.8 73.3	94.6 73.9	80° 30'
55	87.8 71.1	88.6 71.7	89.4 72.4	90.1 73.0	90.9 73.6	91.7 74.3	92.5 74.9	93.3 75.5	80° 15'
56	86.6 72.6	87.4 73.3	88.1 73.9	88.9 74.6	89.6 75.2	90.4 75.8	91.2 76.5	92.0 77.1	80° 00'
57	85.3 74.1	86.0 74.8	86.8 75.4	87.5 76.1	88.3 76.8	89.1 77.4	89.9 78.1	90.6 78.7	79° 45'
58	84.0 75.6	84.7 76.3	85.5 77.0	86.2 77.6	86.9 78.3	87.7 79.0	88.4 79.6	89.2 80.3	79° 30'
59	82.6 77.1	83.4 77.8	84.1 78.4	84.8 79.1	85.6 79.8	86.3 80.5	87.0 81.2	87.8 81.8	79° 15'
60	81.3 78.5	82.0 79.2	82.7 79.9	83.4 80.6	84.2 81.3	84.9 82.0	85.6 82.7	86.3 83.4	79° 00'
61	79.9 79.9	80.6 80.6	81.3 81.3	82.0 82.0	82.7 82.7	83.4 83.4	84.1 84.1	84.9 84.9	78° 45'

Traverse Table.

(x.)

Distances.		121	122	123	124	125	126	127	128		
Course.	Dist. in Degs.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Course.	
1	120.9	05.9	121.9	06.0	122.9	06.0	123.9	06.1	124.9	06.1	71
2	120.4	11.9	121.4	12.0	122.4	12.1	123.4	12.2	124.4	12.3	72
3	119.7	17.7	120.7	17.9	121.7	18.0	122.7	18.2	123.6	18.3	73
4	118.7	23.6	119.7	23.8	120.6	24.0	121.6	24.2	122.6	24.4	74
5	117.4	29.4	118.3	29.6	119.3	29.9	120.3	30.1	121.3	30.4	75
6	115.8	35.1	116.8	35.4	117.7	35.7	118.7	36.0	119.6	36.3	76
7	113.9	40.8	114.9	41.1	115.8	41.4	116.7	41.8	117.7	42.1	77
8	111.8	46.3	112.7	46.7	113.6	47.1	114.6	47.5	115.5	47.8	78
9	109.4	51.7	110.3	52.2	111.2	52.6	112.1	53.0	113.0	53.5	79
10	106.7	57.0	107.6	57.5	108.5	58.0	109.4	58.4	110.2	58.9	80
11	103.8	62.2	104.6	62.7	105.5	63.2	106.4	63.7	107.2	64.3	81
12	100.6	67.2	101.4	67.8	102.3	68.3	103.1	68.9	103.9	69.4	82
13	97.2	72.1	98.0	72.7	98.8	73.3	99.6	73.9	100.4	74.5	83
14	93.5	76.8	94.3	77.4	95.1	78.0	95.8	78.7	96.6	79.3	84
15	89.6	81.3	90.4	81.9	91.1	82.6	91.9	83.3	92.6	83.9	85
16	85.6	85.6	86.3	86.3	87.0	87.0	87.7	88.4	88.1	89.1	86
17	81.5	89.5	90.2	90.8	91.5	92.0	92.7	93.4	94.1	94.8	87
18	77.2	93.2	93.8	94.4	95.1	95.6	96.3	96.9	97.6	98.3	88
19	72.7	96.7	97.2	97.8	98.4	99.0	99.6	100.2	100.8	101.4	89
20	68.0	100.0	100.5	101.0	101.6	102.1	102.7	103.2	103.8	104.3	90
21	63.1	103.1	103.5	104.0	104.5	105.0	105.6	106.1	106.6	107.1	91
22	58.0	106.0	106.3	106.8	107.3	107.8	108.3	108.8	109.3	109.8	92
23	52.7	108.7	108.9	109.4	109.9	110.4	110.9	111.4	111.9	112.4	93
24	47.2	111.2	111.3	111.8	112.3	112.8	113.3	113.8	114.3	114.8	94
25	41.5	113.5	113.5	114.0	114.5	115.0	115.5	116.0	116.5	117.0	95
26	35.6	115.6	115.5	116.0	116.5	117.0	117.5	118.0	118.5	119.0	96
27	29.5	117.5	117.3	117.8	118.3	118.8	119.3	119.8	120.3	120.8	97
28	23.2	119.2	118.9	119.4	120.0	120.5	121.0	121.5	122.0	122.5	98
29	16.7	120.7	120.3	120.8	121.3	121.8	122.3	122.8	123.3	123.8	99
30	10.0	122.0	121.5	122.0	122.5	123.0	123.5	124.0	124.5	125.0	100
31	3.1	123.1	122.5	123.0	123.5	124.0	124.5	125.0	125.5	126.0	101
32		124.2	123.5	124.0	124.5	125.0	125.5	126.0	126.5	127.0	102
33		125.2	124.5	125.0	125.5	126.0	126.5	127.0	127.5	128.0	103
34		126.2	125.5	126.0	126.5	127.0	127.5	128.0	128.5	129.0	104
35		127.1	126.5	127.0	127.5	128.0	128.5	129.0	129.5	130.0	105
36		128.0	127.5	128.0	128.5	129.0	129.5	130.0	130.5	131.0	106
37		128.8	128.3	128.8	129.3	129.8	130.3	130.8	131.3	131.8	107
38		129.6	129.1	129.6	130.1	130.6	131.1	131.6	132.1	132.6	108
39		130.3	130.0	130.3	130.8	131.3	131.8	132.3	132.8	133.3	109
40		131.0	130.7	131.0	131.5	132.0	132.5	133.0	133.5	134.0	110
41		131.7	131.4	131.7	132.2	132.7	133.2	133.7	134.2	134.7	111
42		132.4	132.1	132.4	132.9	133.4	133.9	134.4	134.9	135.4	112
43		133.1	132.8	133.1	133.6	134.1	134.6	135.1	135.6	136.1	113
44		133.8	133.5	133.8	134.3	134.8	135.3	135.8	136.3	136.8	114
45		134.5	134.2	134.5	135.0	135.5	136.0	136.5	137.0	137.5	115
46		135.2	134.9	135.2	135.7	136.2	136.7	137.2	137.7	138.2	116
47		135.9	135.6	135.9	136.4	136.9	137.4	137.9	138.4	138.9	117
48		136.6	136.3	136.6	137.1	137.6	138.1	138.6	139.1	139.6	118
49		137.3	137.0	137.3	137.8	138.3	138.8	139.3	139.8	140.3	119
50		138.0	137.7	138.0	138.5	139.0	139.5	140.0	140.5	141.0	120
51		138.7	138.4	138.7	139.2	139.7	140.2	140.7	141.2	141.7	121
52		139.4	139.1	139.4	139.9	140.4	140.9	141.4	141.9	142.4	122
53		140.1	139.8	140.1	140.6	141.1	141.6	142.1	142.6	143.1	123
54		140.8	140.5	140.8	141.3	141.8	142.3	142.8	143.3	143.8	124
55		141.5	141.2	141.5	142.0	142.5	143.0	143.5	144.0	144.5	125
56		142.2	141.9	142.2	142.7	143.2	143.7	144.2	144.7	145.2	126
57		142.9	142.6	142.9	143.4	143.9	144.4	144.9	145.4	145.9	127
58		143.6	143.3	143.6	144.1	144.6	145.1	145.6	146.1	146.6	128
59		144.3	144.0	144.3	144.8	145.3	145.8	146.3	146.8	147.3	129
60		145.0	144.7	145.0	145.5	146.0	146.5	147.0	147.5	148.0	130
61		145.7	145.4	145.7	146.2	146.7	147.2	147.7	148.2	148.7	131
62		146.4	146.1	146.4	146.9	147.4	147.9	148.4	148.9	149.4	132
63		147.1	146.8	147.1	147.6	148.1	148.6	149.1	149.6	150.1	133
64		147.8	147.5	147.8	148.3	148.8	149.3	149.8	150.3	150.8	134
65		148.5	148.2	148.5	149.0	149.5	150.0	150.5	151.0	151.5	135
66		149.2	148.9	149.2	149.7	150.2	150.7	151.2	151.7	152.2	136
67		149.9	149.6	149.9	150.4	150.9	151.4	151.9	152.4	152.9	137
68		150.6	150.3	150.6	151.1	151.6	152.1	152.6	153.1	153.6	138
69		151.3	151.0	151.3	151.8	152.3	152.8	153.3	153.8	154.3	139
70		152.0	151.7	152.0	152.5	153.0	153.5	154.0	154.5	155.0	140
71		152.7	152.4	152.7	153.2	153.7	154.2	154.7	155.2	155.7	141
72		153.4	153.1	153.4	153.9	154.4	154.9	155.4	155.9	156.4	142
73		154.1	153.8	154.1	154.6	155.1	155.6	156.1	156.6	157.1	143
74		154.8	154.5	154.8	155.3	155.8	156.3	156.8	157.3	157.8	144
75		155.5	155.2	155.5	156.0	156.5	157.0	157.5	158.0	158.5	145
76		156.2	155.9	156.2	156.7	157.2	157.7	158.2	158.7	159.2	146
77		156.9	156.6	156.9	157.4	157.9	158.4	158.9	159.4	159.9	147
78		157.6	157.3	157.6	158.1	158.6	159.1	159.6	160.1	160.6	148
79		158.3	158.0	158.3	158.8	159.3	159.8	160.3	160.8	161.3	149
80		159.0	158.7	159.0	159.5	160.0	160.5	161.0	161.5	162.0	150
81		159.7	159.4	159.7	160.2	160.7	161.2	161.7	162.2	162.7	151
82		160.4	160.1	160.4	160.9	161.4	161.9	162.4	162.9	163.4	152
83		161.1	160.8	161.1	161.6	162.1	162.6	163.1	163.6	164.1	153
84		161.8	161.5	161.8	162.3	162.8	163.3	163.8	164.3	164.8	154
85		162.5	162.2	162.5	163.0	163.5	164.0	164.5	165.0	165.5	155
86		163.2	162.9	163.2	163.7	164.2	164.7	165.2	165.7	166.2	156
87		163.9	163.6	163.9	164.4	164.9	165.4	165.9	166.4	166.9	157
88		164.6	164.3	164.6	165.1	165.6	166.1	166.6	167.1	167.6	158
89		165.3	165.0	165.3	165.8	166.3	166.8	167.3	167.8	168.3	159
90		166.0	165.7	166.0	166.5	167.0	167.5	168.0	168.5	169.0	160
91		166.7	166.4	166.7	167.2	167.7	168.2	168.7	169.2	169.7	161
92		167.4	167.1	167.4	167.9	168.4	168.9	169.4	169.9	170.4	162
93		168.1	167.8	168.1	168.6	169.1	169.6	170.1	170.6	171.1	163
94		168.8	168.5	168.8	169.3	169.8	170.3	170.8	171.3	171.8	164
95		169.5	169.2	169.5	170.0	170.5	171.0	171.5	172.0	172.5	165
96		170.2	169.9	170.2	170.7	171.2	171.7	172.2	172.7	173.2	166
97		170.9	170.6	170.9	171.4	171.9	172.4	172.9	173.4	173.9	167
98		171.6	171.3	171.6	172.1	172.6	173.1	173.6	174.1	174.6	168
99		172.3	172.0	172.3	172.8	173.3	173.8	174.3	174.8	175.3	169
100		173.0	172.7	173.0	173.5	174.0					

Traverse Table.

(x.)

Distance. 129		130		131		132		133		134		135		136		Crs.
Crse.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Crse.	
1	128.8 06.3	129.8 06.4	130.8 06.4	131.8 06.5	132.8 06.5	133.8 06.6	134.8 06.6	135.8 06.7	128.4 12.6	129.4 12.7	130.4 12.8	131.4 12.9	132.4 13.0	133.4 13.1	134.3 13.2	135.3 13.3
2	127.6 18.9	128.6 19.1	129.6 19.2	130.6 19.4	131.6 19.5	132.5 19.7	133.5 19.8	134.5 20.0	127.5 25.2	127.5 25.4	128.5 25.6	129.5 25.8	130.4 26.0	131.4 26.1	132.4 26.3	133.4 26.5
3	126.5 25.2	127.5 25.4	128.5 25.6	129.5 25.8	130.4 26.0	131.4 26.1	132.4 26.3	133.4 26.5	125.1 31.3	126.1 31.6	127.1 31.8	128.0 32.1	129.0 32.3	130.0 32.6	131.0 32.8	131.9 33.0
4	123.5 37.4	124.4 37.7	125.4 38.0	126.3 38.3	127.3 38.6	128.2 38.9	129.2 39.2	130.1 39.5	123.5 43.5	122.4 43.8	123.3 44.1	124.3 44.5	125.2 44.8	126.2 45.1	127.1 45.5	128.0 45.8
5	121.5 43.5	122.4 43.8	123.3 44.1	124.3 44.5	125.2 44.8	126.2 45.1	127.1 45.5	128.0 45.8	119.2 49.4	120.1 49.8	121.0 50.1	122.0 50.5	122.9 50.9	123.8 51.3	124.7 51.7	125.7 52.0
6	119.2 49.4	120.1 49.8	121.0 50.1	122.0 50.5	122.9 50.9	123.8 51.3	124.7 51.7	125.7 52.0	116.6 55.2	117.5 55.6	118.4 56.0	119.3 56.4	120.2 56.9	121.1 57.3	122.0 57.7	122.9 58.2
7	116.6 55.2	117.5 55.6	118.4 56.0	119.3 56.4	120.2 56.9	121.1 57.3	122.0 57.7	122.9 58.2	113.8 60.8	114.7 61.3	115.5 61.7	116.4 62.2	117.3 62.7	118.2 63.2	119.1 63.6	119.9 64.1
8	113.8 60.8	114.7 61.3	115.5 61.7	116.4 62.2	117.3 62.7	118.2 63.2	119.1 63.6	119.9 64.1	110.6 66.3	111.5 66.8	112.4 67.3	113.2 67.9	114.1 68.4	114.9 68.9	115.8 69.4	116.6 69.9
9	110.6 66.3	111.5 66.8	112.4 67.3	113.2 67.9	114.1 68.4	114.9 68.9	115.8 69.4	116.6 69.9	107.3 71.7	108.1 72.2	108.9 72.8	109.7 73.3	110.6 73.9	111.4 74.4	112.2 75.0	113.1 75.6
10	107.3 71.7	108.1 72.2	108.9 72.8	109.7 73.3	110.6 73.9	111.4 74.4	112.2 75.0	113.1 75.6	103.6 76.9	104.4 77.4	105.2 78.0	106.0 78.6	106.8 79.2	107.6 79.8	108.4 80.4	109.2 81.0
11	103.6 76.9	104.4 77.4	105.2 78.0	106.0 78.6	106.8 79.2	107.6 79.8	108.4 80.4	109.2 81.0	99.7 81.8	100.5 82.5	101.3 83.1	102.0 83.7	102.8 84.4	103.6 85.0	104.4 85.6	105.1 86.3
12	99.7 81.8	100.5 82.5	101.3 83.1	102.0 83.7	102.8 84.4	103.6 85.0	104.4 85.6	105.1 86.3	95.6 86.6	96.3 87.3	97.1 88.0	97.8 88.6	98.5 89.3	99.3 90.0	100.0 90.7	100.8 91.3
13	95.6 86.6	96.3 87.3	97.1 88.0	97.8 88.6	98.5 89.3	99.3 90.0	100.0 90.7	100.8 91.3	91.2 91.2	91.9 91.9	92.6 92.6	93.3 93.3	94.0 94.0	94.8 94.8	95.5 95.5	96.2 96.2
14	91.2 91.2	91.9 91.9	92.6 92.6	93.3 93.3	94.0 94.0	94.8 94.8	95.5 95.5	96.2 96.2	129.0 02.3	130.0 02.3	131.0 02.3	132.0 02.3	133.0 02.3	134.0 02.3	135.0 02.4	136.0 02.4
15	129.0 02.3	130.0 02.3	131.0 02.3	132.0 02.3	133.0 02.3	134.0 02.3	135.0 02.4	136.0 02.4	128.9 04.5	129.9 04.5	130.9 04.6	131.9 04.6	132.9 04.6	133.9 04.7	134.9 04.7	135.9 04.7
16	128.9 04.5	129.9 04.5	130.9 04.6	131.9 04.6	132.9 04.6	133.9 04.7	134.9 04.7	135.9 04.7	128.8 06.8	129.8 06.8	130.8 06.9	131.8 06.9	132.8 07.0	133.8 07.0	134.8 07.1	135.8 07.1
17	128.8 06.8	129.8 06.8	130.8 06.9	131.8 06.9	132.8 07.0	133.8 07.0	134.8 07.1	135.8 07.1	128.7 09.0	129.7 09.1	130.7 09.1	131.7 09.2	132.7 09.3	133.7 09.3	134.7 09.4	135.7 09.5
18	128.7 09.0	129.7 09.1	130.7 09.1	131.7 09.2	132.7 09.3	133.7 09.3	134.7 09.4	135.7 09.5	128.5 11.2	129.5 11.3	130.5 11.4	131.5 11.5	132.5 11.6	133.5 11.7	134.5 11.8	135.5 11.9
19	128.5 11.2	129.5 11.3	130.5 11.4	131.5 11.5	132.5 11.6	133.5 11.7	134.5 11.8	135.5 11.9	128.3 13.5	129.3 13.6	130.3 13.7	131.3 13.8	132.3 13.9	133.3 14.0	134.3 14.1	135.3 14.2
20	128.3 13.5	129.3 13.6	130.3 13.7	131.3 13.8	132.3 13.9	133.3 14.0	134.3 14.1	135.3 14.2	128.0 15.7	129.0 15.8	130.0 16.0	131.0 16.1	132.0 16.2	133.0 16.3	134.0 16.5	135.0 16.6
21	128.0 15.7	129.0 15.8	130.0 16.0	131.0 16.1	132.0 16.2	133.0 16.3	134.0 16.5	135.0 16.6	127.7 18.0	128.7 18.1	129.7 18.2	130.7 18.4	131.7 18.5	132.7 18.6	133.7 18.8	134.7 18.9
22	127.7 18.0	128.7 18.1	129.7 18.2	130.7 18.4	131.7 18.5	132.7 18.6	133.7 18.8	134.7 18.9	127.4 20.2	128.4 20.3	129.4 20.5	130.4 20.6	131.4 20.8	132.4 21.0	133.3 21.1	134.3 21.3
23	127.4 20.2	128.4 20.3	129.4 20.5	130.4 20.6	131.4 20.8	132.4 21.0	133.3 21.1	134.3 21.3	127.0 22.4	128.0 22.6	129.0 22.7	130.0 22.9	131.0 23.1	132.0 23.3	132.9 23.4	133.9 23.6
24	127.0 22.4	128.0 22.6	129.0 22.7	130.0 22.9	131.0 23.1	132.0 23.3	132.9 23.4	133.9 23.6	126.6 24.6	127.6 24.8	128.6 25.0	129.6 25.2	130.6 25.4	131.5 25.6	132.5 25.8	133.5 26.0
25	126.6 24.6	127.6 24.8	128.6 25.0	129.6 25.2	130.6 25.4	131.5 25.6	132.5 25.8	133.5 26.0	126.2 26.8	127.2 27.0	128.1 27.1	129.1 27.4	130.1 27.7	131.1 27.9	132.0 28.1	133.0 28.3
26	126.2 26.8	127.2 27.0	128.1 27.1	129.1 27.4	130.1 27.7	131.1 27.9	132.0 28.1	133.0 28.3	125.7 29.0	126.7 29.2	127.6 29.5	128.6 29.7	129.6 29.9	130.6 30.1	131.5 30.4	132.5 30.6
27	125.7 29.0	126.7 29.2	127.6 29.5	128.6 29.7	129.6 29.9	130.6 30.1	131.5 30.4	132.5 30.6	125.2 31.2	126.1 31.4	127.1 31.7	128.1 31.9	129.0 32.2	130.0 32.4	131.0 32.7	132.0 32.9
28	125.2 31.2	126.1 31.4	127.1 31.7	128.1 31.9	129.0 32.2	130.0 32.4	131.0 32.7	132.0 32.9	124.6 33.4	125.6 33.6	126.5 33.9	127.5 34.2	128.5 34.4	129.4 34.7	130.4 34.9	131.4 35.2
29	124.6 33.4	125.6 33.6	126.5 33.9	127.5 34.2	128.5 34.4	129.4 34.7	130.4 34.9	131.4 35.2	124.0 35.6	125.0 35.8	125.9 36.1	126.9 36.4	127.8 36.7	128.8 36.9	129.8 37.2	130.7 37.5
30	124.0 35.6	125.0 35.8	125.9 36.1	126.9 36.4	127.8 36.7	128.8 36.9	129.8 37.2	130.7 37.5	123.4 37.7	124.3 38.0	125.3 38.3	126.2 38.6	127.2 38.9	128.1 39.2	129.1 39.5	130.1 39.8
31	123.4 37.7	124.3 38.0	125.3 38.3	126.2 38.6	127.2 38.9	128.1 39.2	129.1 39.5	130.1 39.8	122.7 39.9	123.6 40.2	124.6 40.5	125.5 40.8	126.5 41.1	127.4 41.4	128.4 41.7	129.3 42.0
32	122.7 39.9	123.6 40.2	124.6 40.5	125.5 40.8	126.5 41.1	127.4 41.4	128.4 41.7	129.3 42.0	122.0 42.0	122.9 42.3	123.9 42.6	124.8 43.0	125.8 43.3	126.7 43.6	127.6 44.0	128.6 44.3
33	122.0 42.0	122.9 42.3	123.9 42.6	124.8 43.0	125.8 43.3	126.7 43.6	127.6 44.0	128.6 44.3	121.2 44.1	122.2 44.5	123.1 44.8	124.0 45.1	125.0 45.5	125.9 45.8	126.9 46.2	127.8 46.5
34	121.2 44.1	122.2 44.5	123.1 44.8	124.0 45.1	125.0 45.5	125.9 45.8	126.9 46.2	127.8 46.5	120.4 46.2	121.4 46.6	122.3 46.9	123.2 47.3	124.2 47.7	125.1 48.0	126.0 48.4	127.0 48.7
35	120.4 46.2	121.4 46.6	122.3 46.9	123.2 47.3	124.2 47.7	125.1 48.0	126.0 48.4	127.0 48.7	119.6 48.3	120.5 48.7	121.5 49.1	122.4 49.4	123.3 49.8	124.2 50.2	125.2 50.6	126.1 50.9
36	119.6 48.3	120.5 48.7	121.5 49.1	122.4 49.4	123.3 49.8	124.2 50.2	125.2 50.6	126.1 50.9	118.7 50.4	119.7 50.8	120.6 51.2	121.5 51.6	122.4 52.0	123.3 52.4	124.3 52.7	125.2 53.1
37	118.7 50.4	119.7 50.8	120.6 51.2	121.5 51.6	122.4 52.0	123.3 52.4	124.3 52.7	125.2 53.1	117.8 52.5	118.8 52.9	119.7 53.3	120.6 53.7	121.5 54.1	122.4 54.5	123.3 54.9	124.2 55.3
38	117.8 52.5	118.8 52.9	119.7 53.3	120.6 53.7	121.5 54.1	122.4 54.5	123.3 54.9	124.2 55.3	116.9 54.5	117.8 54.9	118.7 55.4	119.6 55.8	120.5 56.2	121.4 56.6	122.4 57.1	123.3 57.5
39	116.9 54.5	117.8 54.9	118.7 55.4	119.6 55.8	120.5 56.2	121.4 56.6	122.4 57.1	123.3 57.5	115.9 56.5	116.8 57.0	117.7 57.4	118.6 57.9	119.5 58.3	120.4 58.7	121.3 59.2	122.2 59.6
40	115.9 56.5	116.8 57.0	117.7 57.4	118.6 57.9	119.5 58.3	120.4 58.7	121.3 59.2	122.2 59.6	114.9 58.6	115.8 59.0	116.7 59.5	117.6 59.9	118.5 60.4	119.4 60.8	120.3 61.3	121.2 61.7
41	114.9 58.6	115.8 59.0	116.7 59.5	117.6 59.9	118.5 60.4	119.4 60.8	120.3 61.3	121.2 61.7	113.9 60.6	114.8 61.0	115.7 61.5	116.5 62.0	117.4 62.4	118.3 62.9	119.2 63.4	120.1 63.8
42	113.9 60.6	114.8 61.0	115.7 61.5	116.5 62.0	117.4 62.4	118.3 62.9	119.2 63.4	120.1 63.8	112.8 62.5	113.7 63.0	114.6 63.5	115.4 64.0	116.3 64.5	117.2 65.0	118.1 65.4	118.9 65.9
43	112.8 62.5	113.7 63.0	114.6 63.5	115.4 64.0	116.3 64.5	117.2 65.0	118.1 65.4	118.9 65.9	111.7 64.5	112.6 65.0	113.4 65.5	114.3 66.0	115.2 66.5	116.0 67.0	116.9 67.5	117.8 68.0
44	111.7 64.5	112.6 65.0	113.4 65.5	114.3 66.0	115.2 66.5	116.0 67.0	116.9 67.5	117.8 68.0	110.6 66.4	111.4 67.0	112.3 67.5	113.1 68.0	114.0 68.5	114.9 69.0	115.7 69.5	116.6 70.0
45	110.6 66.4	111.4 67.0	112.3 67.5	113.1 68.0	114.0 68.5	114.9 69.0	115.7 69.5	116.6 70.0	109.4 68.4	110.2 68.9	111.1 69.4	111.9 69.9	112.8 70.5	113.6 71.0	114.5 71.5	115.3 72.1
46	109.4 68.4	110.2 68.9	111.1 69.4	111.9 69.9	112.8 70.5	113.6 71.0	114.5 71.5	115.3 72.1	108.2 70.3	109.0 70.8	109.9 71.3	110.7 71.9	111.5 72.4	112.4 73.0	113.2 73.5	114.1 74.1
47	108.2 70.3	109.0 70.8	109.9 71.3	110.7 71.9	111.5 72.4	112.4 73.0	113.2 73.5	114.1 74.1	106.9 72.1	107.8 72.7	108.6 73.3	109.4 73.8	110.3 74.4	111.1 74.9	111.9 75.5	112.7 76.1
48	106.9 72.1	107.8 72.7	108.6 73.3	109.4 73.8	110.3 74.4	111.1										

(x.)

Traverse Table.

Distances.		137		138		139		140		141		142		143		144		
Course.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Course.	
1	136.8	06.7	137.8	06.8	138.8	06.8	139.8	06.9	140.8	06.9	141.8	07.0	142.8	07.0	143.8	07.1	72	
2	136.3	13.4	137.3	13.5	138.3	13.6	139.3	13.7	140.3	13.8	141.3	13.9	142.3	14.0	143.3	14.1	73	
3	135.5	20.1	136.5	20.2	137.5	20.4	138.5	20.5	139.5	20.7	140.5	20.6	141.4	21.0	142.4	21.1	74	
4	134.4	26.7	135.3	26.9	136.3	27.1	137.3	27.3	138.3	27.5	139.3	27.7	140.2	27.9	141.2	28.1	75	
5	132.9	33.3	133.9	33.5	134.8	33.8	135.8	34.0	136.8	34.3	137.7	34.5	138.7	34.7	139.7	35.0	76	
6	131.1	39.8	132.1	40.1	133.0	40.3	134.0	40.6	134.9	40.9	135.9	41.2	136.8	41.3	137.8	41.8	77	
7	129.0	46.1	129.9	46.5	130.9	46.8	131.8	47.2	132.8	47.5	133.7	47.8	134.6	48.2	135.6	48.5	78	
8	126.6	52.4	127.5	52.8	128.4	53.2	129.3	53.6	130.3	54.0	131.2	54.3	132.1	54.7	133.0	55.1	79	
9	123.8	58.6	124.7	59.0	125.7	59.4	126.6	59.9	127.5	60.3	128.4	60.7	129.3	61.2	130.2	61.6	80	
10	120.8	64.6	121.7	65.0	122.6	65.5	123.5	66.0	124.4	66.5	125.2	66.9	126.1	67.4	127.0	67.9	81	
11	117.5	70.4	118.4	70.9	119.2	71.5	120.1	72.0	120.9	72.5	121.8	73.0	122.7	73.5	123.5	74.0	82	
12	113.9	76.1	114.7	76.7	115.6	77.2	116.4	77.8	117.2	78.3	118.1	78.9	118.9	79.4	119.7	80.0	83	
13	110.0	81.6	110.8	82.2	111.6	82.8	112.4	83.4	113.2	84.0	114.0	84.6	114.9	85.2	115.7	85.8	84	
14	105.9	86.9	106.7	87.5	107.4	88.2	108.2	88.8	109.0	89.4	109.8	90.1	110.5	90.7	111.3	91.3	85	
15	101.5	92.0	102.2	92.7	103.0	93.3	103.7	94.0	104.5	94.7	105.2	95.4	106.0	96.0	106.7	96.7	86	
16	96.9	96.9	97.6	97.6	98.3	98.3	99.0	99.0	99.7	99.7	100.4	100.4	101.1	101.1	101.8	101.8	87	
17	137.0	02.4	138.0	02.4	139.0	02.4	140.0	02.4	141.0	02.5	142.0	02.5	143.0	02.5	144.0	02.5	88	
18	136.9	04.8	137.9	04.8	138.9	04.9	139.9	04.9	140.9	04.9	141.9	05.0	142.9	05.0	143.9	05.0	89	
19	136.8	07.2	137.8	07.2	138.8	07.3	139.8	07.3	140.8	07.4	141.8	07.4	142.8	07.5	143.8	07.5	90	
20	136.7	09.6	137.7	09.6	138.7	09.7	139.7	09.8	140.7	09.8	141.7	09.9	142.7	10.0	143.6	10.0	91	
21	136.5	11.9	137.5	12.0	138.5	12.1	139.5	12.2	140.5	12.3	141.5	12.4	142.5	12.5	143.5	12.6	92	
22	136.2	14.3	137.2	14.4	138.2	14.5	139.2	14.6	140.2	14.7	141.2	14.8	142.2	14.9	143.2	15.1	93	
23	136.0	16.7	137.0	16.8	138.0	16.9	139.0	17.1	139.9	17.2	140.9	17.3	141.9	17.4	142.9	17.5	94	
24	135.7	19.1	136.7	19.2	137.7	19.3	138.6	19.5	139.5	19.6	140.6	19.8	141.6	19.9	142.6	20.0	95	
25	135.3	21.4	136.3	21.6	137.3	21.7	138.3	21.9	139.3	22.1	140.3	22.2	141.2	22.4	142.2	22.5	96	
26	134.9	23.8	135.9	24.0	136.9	24.1	137.9	24.3	138.9	24.5	139.8	24.7	140.8	24.8	141.8	25.0	97	
27	134.5	26.1	135.5	26.3	136.4	26.5	137.4	26.7	138.4	26.9	139.4	27.1	140.4	27.3	141.4	27.5	98	
28	134.0	28.5	135.0	28.7	136.0	28.9	137.0	29.1	137.9	29.3	138.9	29.5	139.9	29.7	140.9	29.9	99	
29	133.5	30.8	134.5	31.0	135.4	31.3	136.4	31.5	137.4	31.7	138.4	31.9	139.3	32.2	140.3	32.4	100	
30	132.9	33.1	133.9	33.4	134.9	33.6	135.8	33.9	136.8	34.1	137.8	34.4	138.8	34.6	139.7	34.8	101	
31	132.3	35.5	133.3	35.7	134.3	36.0	135.2	36.2	136.2	36.5	137.2	36.8	138.1	37.0	139.1	37.3	102	
32	131.7	37.8	132.7	38.0	133.6	38.3	134.6	38.6	135.5	38.9	136.5	39.1	137.5	39.4	138.4	39.7	103	
33	131.0	40.1	132.0	40.3	132.9	40.6	133.9	40.9	134.8	41.2	135.8	41.5	136.8	41.8	137.7	42.1	104	
34	130.3	42.3	131.2	42.6	132.2	43.0	133.1	43.3	134.1	43.6	135.1	43.9	136.0	44.2	137.0	44.5	105	
35	129.5	44.6	130.5	44.9	131.4	45.3	132.4	45.6	133.3	45.9	134.3	46.2	135.2	46.5	136.2	46.9	106	
36	128.7	46.9	129.7	47.2	130.6	47.5	131.6	47.9	132.5	48.2	133.4	48.6	134.4	48.9	135.3	49.3	107	
37	127.9	49.1	128.8	49.5	129.8	49.8	130.7	50.2	131.6	50.5	132.6	50.9	133.5	51.2	134.4	51.6	108	
38	127.0	51.3	128.0	51.7	128.9	52.1	129.8	52.4	130.7	52.8	131.7	53.2	132.6	53.6	133.5	53.9	109	
39	126.1	53.5	127.0	53.9	128.0	54.3	128.9	54.7	129.8	55.1	130.7	55.5	131.6	55.9	132.6	56.3	110	
40	125.2	55.7	126.1	56.1	127.0	56.5	127.9	56.9	128.8	57.3	129.7	57.8	130.6	58.2	131.6	58.6	111	
41	124.2	57.9	125.1	58.3	126.0	58.7	126.9	59.2	127.8	59.6	128.7	60.0	129.6	60.4	130.5	60.9	112	
42	123.1	60.1	124.0	60.5	124.9	60.9	125.8	61.4	126.7	61.8	127.6	62.2	128.5	62.7	129.4	63.1	113	
43	122.1	62.2	123.0	62.7	123.8	63.1	124.7	63.6	125.6	64.0	126.5	64.5	127.4	64.9	128.3	65.4	114	
44	121.0	64.3	121.8	64.8	122.7	65.3	123.6	65.7	124.5	66.2	125.4	66.7	126.3	67.1	127.1	67.6	115	
45	119.8	66.4	120.7	66.9	121.6	67.4	122.4	67.9	123.3	68.4	124.2	68.8	125.1	69.3	125.9	69.8	116	
46	118.6	68.5	119.5	69.0	120.4	69.5	121.2	70.0	122.1	70.5	123.0	71.0	123.8	71.5	124.7	72.0	117	
47	117.4	70.6	118.3	71.1	119.1	71.6	120.0	72.1	120.9	72.6	121.7	73.1	122.6	73.7	123.4	74.2	118	
48	116.2	72.6	117.0	73.1	117.9	73.7	118.7	74.2	119.6	74.7	120.4	75.2	121.3	75.8	122.1	76.3	119	
49	114.9	74.6	115.7	75.2	116.6	75.7	117.4	76.2	118.3	76.8	119.1	77.3	119.9	77.9	120.8	78.4	120	
50	113.6	76.6	114.4	77.2	115.2	77.7	116.1	78.3	116.9	78.8	117.7	79.4	118.6	80.0	119.4	80.5	121	
51	112.2	78.6	113.0	79.2	113.9	79.7	114.7	80.3	115.5	80.9	116.3	81.4	117.1	82.0	118.0	82.6	122	
52	110.8	80.5	111.6	81.1	112.5	81.7	113.3	82.3	114.1	82.9	114.9	83.5	115.7	84.1	116.5	84.6	123	
53	109.4	82.4	110.2	83.1	111.0	83.7	111.8	84.3	112.6	84.9	113.4	85.5	114.2	86.1	115.0	86.7	124	
54	108.0	84.3	108.7	85.0	109.5	85.6	110.3	86.2	111.1	86.8	111.9	87.4	112.7	88.0	113.5	88.7	125	
55	106.5	86.2	107.2	86.8	108.0	87.5	108.8	88.1	109.6	88.7	110.4	89.4	111.1	90.0	111.9	90.6	126	
56	104.9	88.1	105.7	88.7	106.5	89.3	107.2	90.0	108.0	90.6	108.8	91.3	109.5	91.9	110.3	92.6	127	
57	103.4	89.9	104.1	90.5	104.9	91.2	105.7	91.8	106.4	92.5	107.2	93.2	107.9	93.8	108.7	94.5	128	
58	101.8	91.7	102.6	92.3	103.3	93.0	104.0	93.7	104.8	94.3	105.5	95.0	106.3	95.7	107.0	96.4	129	
59	100.2	93.4	100.9	94.1	101.7	94.8	102.4	95.5	103.1	96.2	103.9	96.8	104.6	97.5	105.3	98.2	130	
60	98.5	95.2	99.3	95.9	100.0	96.6	100.7	97.3	101.4	97.9	102.1	98.6	102.9	99.3	103.6	100.0	131	
61	96.9	96.9	97.6	97.6	98.3	98.3	99.0	99.0	99.7	99.7	100.4	100.4	101.1	101.1	101.8	101.8	132	

(x.)

Traverse Table.

Distance		145		146		147		148		149		150		151		152		Cm.
Dist.	Lat.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	
1	144.8	07.1	145.8	07.2	146.8	07.2	147.8	07.3	148.8	07.3	149.8	07.4	150.8	07.4	151.8	07.5	79	
2	144.3	14.2	145.3	14.3	146.3	14.4	147.3	14.5	148.3	14.6	149.3	14.7	150.3	14.8	151.3	14.9	78	
3	143.4	21.3	144.4	21.4	145.4	21.6	146.4	21.7	147.4	21.9	148.4	22.0	149.4	22.2	150.3	22.3	77	
4	142.2	28.3	143.2	28.5	144.2	28.7	145.2	28.9	146.1	29.1	147.1	29.3	148.1	29.5	149.1	29.7	76	
5	140.7	35.2	141.6	35.5	142.6	35.7	143.6	36.0	144.5	36.2	145.5	36.5	146.5	36.7	147.4	36.9	75	
6	138.8	42.1	139.7	42.4	140.7	42.7	141.6	43.0	142.6	43.2	143.5	43.5	144.5	43.8	145.5	44.1	74	
7	136.5	48.8	137.5	49.2	138.4	49.5	139.3	49.9	140.3	50.2	141.2	50.5	142.2	50.9	143.1	51.2	73	
8	134.0	55.5	134.9	55.9	135.8	56.3	136.7	56.6	137.7	57.0	138.6	57.4	139.5	57.8	140.4	58.2	72	
9	131.1	62.0	132.0	62.4	132.9	62.9	133.8	63.3	134.7	63.7	135.6	64.1	136.5	64.6	137.4	65.0	71	
10	127.9	68.3	128.8	68.8	129.6	69.3	130.5	69.8	131.4	70.2	132.3	70.7	133.2	71.2	134.1	71.6	70	
11	124.4	74.5	125.2	75.1	126.1	75.6	126.9	76.1	127.8	76.6	128.7	77.1	129.5	77.6	130.4	78.1	69	
12	120.6	80.6	121.4	81.1	122.2	81.7	123.1	82.2	123.9	82.8	124.7	83.3	125.5	83.9	126.4	84.4	68	
13	116.5	86.4	117.3	87.0	118.1	87.6	118.9	88.2	119.7	88.8	120.5	89.4	121.3	90.0	122.1	90.5	67	
14	112.1	92.0	112.9	92.6	113.6	93.3	114.4	93.9	115.2	94.5	115.9	95.2	116.7	95.8	117.5	96.4	66	
15	107.4	97.4	108.2	98.0	108.9	98.7	109.7	99.4	110.4	100.1	111.1	100.7	111.9	101.4	112.6	102.1	65	
16	102.5	102.5	103.2	103.2	103.9	103.9	104.7	104.7	105.4	105.4	106.1	106.1	106.8	106.8	107.5	107.5	64	
17	145.0	02.5	146.0	02.5	147.0	02.6	148.0	02.6	149.0	02.6	150.0	02.6	151.0	02.6	152.0	02.7	89	
18	144.9	05.1	145.9	05.1	146.9	05.1	147.9	05.2	148.9	05.2	149.9	05.2	150.9	05.3	151.9	05.3	88	
19	144.8	07.6	145.8	07.6	146.8	07.7	147.8	07.7	148.8	07.8	149.8	07.9	150.8	07.9	151.8	08.0	87	
20	144.6	10.1	145.6	10.2	146.6	10.3	147.6	10.3	148.6	10.4	149.6	10.5	150.6	10.5	151.6	10.6	86	
21	144.4	12.6	145.4	12.7	146.4	12.8	147.4	12.9	148.4	13.0	149.4	13.1	150.4	13.2	151.4	13.2	85	
22	144.2	15.2	145.2	15.3	146.2	15.4	147.2	15.5	148.2	15.6	149.2	15.7	150.2	15.8	151.2	15.9	84	
23	143.9	17.7	144.9	17.8	145.9	17.9	146.9	18.0	147.9	18.2	148.9	18.3	149.9	18.4	150.9	18.5	83	
24	143.6	20.2	144.6	20.3	145.6	20.5	146.6	20.6	147.5	20.7	148.5	20.9	149.5	21.0	150.5	21.2	82	
25	143.2	22.7	144.2	22.8	145.2	23.0	146.2	23.2	147.2	23.3	148.2	23.5	149.1	23.6	150.1	23.8	81	
26	142.8	25.2	143.8	25.4	144.8	25.5	145.8	25.7	146.7	25.9	147.7	26.0	148.7	26.2	149.7	26.4	80	
27	142.3	27.7	143.3	27.9	144.3	28.0	145.3	28.2	146.3	28.4	147.2	28.6	148.2	28.8	149.2	29.0	79	
28	141.8	30.1	142.8	30.4	143.8	30.6	144.8	30.8	145.7	31.0	146.7	31.2	147.7	31.4	148.7	31.6	78	
29	141.3	32.6	142.3	32.8	143.2	33.1	144.2	33.3	145.2	33.5	146.2	33.7	147.1	34.0	148.1	34.2	77	
30	140.7	35.1	141.7	35.3	142.6	35.6	143.6	35.8	144.6	36.0	145.5	36.3	146.5	36.5	147.5	36.8	76	
31	140.1	37.5	141.0	37.8	142.0	38.0	143.0	38.3	143.9	38.6	144.9	38.8	145.9	39.1	146.8	39.3	75	
32	139.4	40.0	140.3	40.2	141.3	40.5	142.3	40.8	143.2	41.1	144.2	41.3	145.2	41.6	146.1	41.9	74	
33	138.7	42.4	139.6	42.7	140.6	43.0	141.5	43.3	142.5	43.6	143.4	43.9	144.4	44.1	145.4	44.4	73	
34	137.9	44.8	138.9	45.1	139.8	45.4	140.8	45.7	141.7	46.0	142.7	46.4	143.6	46.7	144.6	47.0	72	
35	137.1	47.2	138.0	47.5	139.0	47.9	139.9	48.2	140.9	48.5	141.8	48.8	142.8	49.2	143.7	49.5	71	
36	136.3	49.6	137.2	49.9	138.1	50.3	139.1	50.6	140.0	51.0	141.0	51.3	141.9	51.6	142.8	52.0	70	
37	135.4	52.0	136.3	52.3	137.2	52.7	138.2	53.0	139.1	53.4	140.0	53.8	141.0	54.1	141.9	54.5	69	
38	134.4	54.3	135.4	54.7	136.3	55.1	137.2	55.4	138.2	55.8	139.1	56.2	140.0	56.6	140.9	56.9	68	
39	133.5	56.7	134.4	57.0	135.3	57.4	136.2	57.8	137.2	58.2	138.1	58.6	139.0	59.0	139.9	59.4	67	
40	132.5	59.0	133.4	59.4	134.3	59.8	135.2	60.2	136.1	60.6	137.0	61.0	137.9	61.4	138.9	61.8	66	
41	131.4	61.3	132.3	61.7	133.2	62.1	134.1	62.5	135.0	63.0	135.9	63.4	136.9	63.8	137.8	64.2	65	
42	130.3	63.6	131.2	64.0	132.1	64.4	133.0	64.9	133.9	65.3	134.8	65.8	135.7	66.2	136.6	66.6	64	
43	129.2	65.8	130.1	66.3	131.0	66.7	131.9	67.2	132.8	67.6	133.7	68.1	134.5	68.6	135.4	69.0	63	
44	128.0	68.1	128.9	68.5	129.8	69.0	130.7	69.5	131.6	70.0	132.4	70.4	133.3	70.9	134.2	71.4	62	
45	126.9	70.3	127.7	70.8	128.6	71.3	129.4	71.8	130.3	72.2	131.2	72.7	132.1	73.2	132.9	73.7	61	
46	125.6	72.5	126.4	73.0	127.3	73.5	128.2	74.0	129.0	74.5	129.9	75.0	130.8	75.5	131.6	76.0	60	
47	124.3	74.7	125.1	75.2	126.0	75.7	126.9	76.2	127.7	76.7	128.6	77.3	129.4	77.8	130.3	78.3	59	
48	123.0	76.8	123.8	77.4	124.7	77.9	125.5	78.4	126.4	79.0	127.2	79.5	128.1	80.0	128.9	80.5	58	
49	121.6	79.0	122.4	79.5	123.3	80.1	124.1	80.6	125.0	81.2	125.8	81.7	126.6	82.2	127.5	82.8	57	
50	120.2	81.1	121.0	81.6	121.9	82.2	122.7	82.8	123.5	83.3	124.4	83.9	125.2	84.4	126.0	85.0	56	
51	118.8	83.2	119.6	83.7	120.4	84.3	121.2	84.9	122.1	85.5	122.9	86.0	123.7	86.6	124.5	87.2	55	
52	117.3	85.2	118.1	85.8	118.9	86.4	119.7	87.0	120.5	87.5	121.4	88.2	122.2	88.8	123.0	89.3	54	
53	115.8	87.3	116.6	87.9	117.4	88.5	118.2	89.1	119.0	89.7	119.8	90.3	120.6	90.9	121.4	91.5	53	
54	114.3	89.3	115.0	89.9	115.8	90.5	116.6	91.1	117.4	91.7	118.2	92.3	119.0	93.0	119.8	93.6	52	
55	112.7	91.3	113.5	91.9	114.2	92.5	115.0	93.1	115.8	93.8	116.6	94.4	117.3	95.0	118.1	95.7	51	
56	111.1	93.2	111.8	93.8	112.6	94.5	113.4	95.1	114.1	95.8	114.9	96.4	115.7	97.1	116.4	97.7	50	
57	109.4	95.1	110.2	95.8	110.9	96.4	111.7	97.1	112.5	97.8	113.2	98.4	114.0	99.1	114.7	99.7	49	
58	107.8	97.0	108.5	97.7	109.2	98.4	110.0	99.0	110.7	99.7	111.5	100.4	112.2	101.0	113.0	101.7	48	
59	106.0	98.9	106.8	99.6	107.5	100.3	108.2	100.9	109.0	101.6	109.7	102.3	110.4	103.0	111.2	103.7	47	
60	104.3	100.7	105.0	101.4	105.7	102.1	106.5	102.8	107.2	103.5	107.9	104.2	108.6	104.9	109.3	105.6	46	
61	102.5	102.5	103.2	103.2	103.9	103.9	104.7	104.7	105.4	105.4	106.1	106.1	106.8	106.8	107.5	107.5	45	

Traverse Table.

(x.)

Distance.		153	154	155	156	157	158	159	160	
Course.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Course.
1	152.9 07.5 153.8	07.6 154.8	07.6 155.8	07.7 156.8	07.7 157.8	07.8 158.8	07.8 159.8	07.9 160.8	07.9 161.8	72
2	152.3 15.0 153.3	15.1 154.3	15.2 155.3	15.3 156.3	15.4 157.3	15.5 158.3	15.6 159.3	15.7 160.3	15.7 161.3	73
3	151.3 22.4 152.3	22.6 153.3	22.7 154.3	22.9 155.3	23.0 156.3	23.2 157.3	23.3 158.3	23.5 159.3	23.5 160.3	74
4	150.1 29.9 151.0	30.0 152.0	30.2 153.0	30.4 154.0	30.6 155.0	30.8 156.0	31.0 157.0	31.2 158.0	31.3 159.0	75
5	148.4 37.2 149.4	37.4 150.4	37.7 151.3	37.9 152.3	38.2 153.3	38.4 154.2	38.6 155.2	38.9 156.2	38.9 157.2	76
6	146.4 44.4 147.4	44.7 148.3	45.0 149.3	45.3 150.2	45.6 151.2	45.9 152.2	46.1 153.1	46.4 154.1	46.4 155.1	77
7	144.1 51.5 145.0	51.9 145.9	52.2 146.9	52.5 147.8	52.9 148.8	53.2 149.7	53.5 150.6	53.9 151.6	53.9 152.6	78
8	141.4 58.6 142.1	58.9 143.2	59.3 144.1	59.7 145.1	60.1 146.0	60.5 146.9	60.9 147.8	61.2 148.8	61.2 149.8	79
9	138.3 65.4 139.2	65.9 140.1	66.3 141.0	66.7 141.9	67.1 142.8	67.6 143.7	68.0 144.6	68.4 145.6	68.4 146.6	80
10	134.9 72.1 135.8	72.6 136.7	73.1 137.6	73.5 138.5	74.0 139.4	74.5 140.3	74.9 141.2	75.3 142.2	75.3 143.2	81
11	131.2 78.7 132.1	79.2 132.9	79.7 133.8	80.2 134.7	80.7 135.6	81.2 136.5	81.7 137.4	82.1 138.4	82.1 139.4	82
12	127.2 85.0 128.0	85.6 128.9	86.1 129.7	86.7 130.6	87.2 131.5	87.8 132.4	88.3 133.3	88.8 134.3	88.8 135.3	83
13	122.9 91.1 123.7	91.7 124.5	92.3 125.3	92.9 126.1	93.5 126.9	94.1 127.8	94.7 128.7	95.2 129.7	95.2 130.7	84
14	118.3 97.1 119.0	97.7 119.8	98.3 120.6	99.0 121.4	99.6 122.1	100.2 123.0	100.9 123.7	101.5 124.7	101.5 125.7	85
15	113.4 102.7 114.1	103.4 114.8	104.1 115.6	104.8 116.3	105.4 117.1	106.1 117.8	106.8 118.5	107.4 119.5	107.4 120.5	86
16	108.2 108.2 108.9	108.9 109.6	109.6 110.3	110.3 111.0	111.0 111.7	111.7 112.4	112.4 113.1	113.1 113.8	113.1 114.5	87
17	153.0 02.7 154.0	02.7 155.0	03.7 156.0	02.7 157.0	02.7 158.0	02.8 159.0	02.8 160.0	02.8 161.0	02.8 162.0	88
18	152.9 03.3 153.9	03.4 154.9	03.4 155.9	03.4 156.9	03.5 157.9	03.5 158.9	03.5 159.9	03.5 160.9	03.5 161.9	89
19	152.8 04.0 153.8	04.1 154.8	04.1 155.8	04.2 156.8	04.2 157.8	04.3 158.8	04.3 159.8	04.3 160.8	04.3 161.8	90
20	152.6 10.7 153.6	10.7 154.6	10.8 155.6	10.9 156.6	11.0 157.6	11.0 158.6	11.1 159.6	11.2 160.6	11.2 161.6	91
21	152.4 13.3 153.4	13.4 154.4	13.5 155.4	13.6 156.4	13.7 157.4	13.8 158.4	13.9 159.4	14.0 160.4	14.0 161.4	92
22	152.2 16.0 153.2	16.1 154.2	16.2 155.1	16.3 156.1	16.4 157.1	16.5 158.1	16.6 159.1	16.7 160.1	16.7 161.1	93
23	151.9 18.6 152.9	18.8 153.8	18.9 154.8	19.0 155.8	19.1 156.8	19.3 157.8	19.4 158.8	19.5 159.8	19.5 160.8	94
24	151.5 21.3 152.5	21.4 153.5	21.6 154.5	21.7 155.5	21.9 156.5	22.0 157.5	22.1 158.5	22.2 159.5	22.2 160.5	95
25	151.1 23.9 152.1	24.1 153.1	24.2 154.1	24.4 155.1	24.6 156.1	24.7 157.0	24.9 158.0	25.0 159.0	25.0 160.0	96
26	150.7 26.6 151.7	26.7 152.6	26.9 153.6	27.1 154.6	27.3 155.6	27.4 156.6	27.6 157.6	27.8 158.6	27.8 159.6	97
27	150.2 29.2 151.2	29.4 152.2	29.6 153.1	29.8 154.1	30.0 155.1	30.1 156.1	30.3 157.1	30.5 158.1	30.5 159.1	98
28	149.7 31.8 150.6	32.0 151.6	32.2 152.6	32.4 153.6	32.6 154.6	32.9 155.6	33.1 156.6	33.3 157.6	33.3 158.6	99
29	149.1 34.4 150.1	34.6 151.0	34.8 152.0	35.1 153.0	35.3 154.0	35.5 155.0	35.8 156.0	36.0 157.0	36.0 158.0	100
30	148.5 37.0 149.4	37.3 150.4	37.5 151.4	37.7 152.3	38.0 153.3	38.2 154.3	38.5 155.3	38.8 156.3	38.8 157.3	101
31	147.8 39.6 148.8	39.9 149.7	40.1 150.7	40.4 151.7	40.6 152.7	40.9 153.6	41.2 154.6	41.5 155.6	41.5 156.6	102
32	147.1 42.2 148.0	42.4 149.0	42.7 150.0	43.0 150.9	43.3 151.9	43.6 152.8	43.9 153.8	44.1 154.8	44.1 155.8	103
33	146.3 44.7 147.3	45.0 148.2	45.3 149.2	45.6 150.1	45.9 151.1	46.2 152.1	46.5 153.0	46.8 154.0	46.8 155.0	104
34	145.5 47.3 146.5	47.6 147.4	47.9 148.4	48.2 149.3	48.5 150.3	48.8 151.2	49.1 152.2	49.4 153.2	49.4 154.2	105
35	144.7 49.8 145.6	50.1 146.6	50.4 147.5	50.8 148.4	51.1 149.4	51.4 150.3	51.8 151.3	52.1 152.3	52.1 153.3	106
36	143.8 52.3 144.7	52.7 145.7	53.0 146.6	53.4 147.5	53.7 148.5	54.0 149.4	54.4 150.4	54.7 151.4	54.7 152.4	107
37	142.8 54.8 143.8	55.2 144.7	55.5 145.6	55.9 146.6	56.3 147.5	56.6 148.4	57.0 149.4	57.3 150.4	57.3 151.4	108
38	141.9 57.3 142.8	57.7 143.7	58.1 144.6	58.4 145.6	58.8 146.5	59.2 147.4	59.6 148.3	59.9 149.3	59.9 150.3	109
39	140.8 59.8 141.8	60.2 142.7	60.6 143.6	61.0 144.5	61.3 145.4	61.7 146.4	62.1 147.3	62.5 148.3	62.5 149.3	110
40	139.8 62.2 140.7	62.6 141.6	63.0 142.5	63.5 143.4	63.9 144.3	64.3 145.3	64.7 146.2	65.1 147.2	65.1 148.2	111
41	138.7 64.7 139.6	65.1 140.5	65.5 141.4	65.9 142.3	66.4 143.2	66.8 144.1	67.2 145.0	67.6 146.0	67.6 147.0	112
42	137.5 67.1 138.4	67.5 139.3	67.9 140.2	68.4 141.1	68.8 142.0	69.3 142.9	69.7 143.8	70.1 144.8	70.1 145.8	113
43	136.3 69.5 137.2	69.9 138.1	70.4 139.0	70.8 139.9	71.3 140.8	71.7 141.7	72.2 142.6	72.6 143.6	72.6 144.6	114
44	135.1 71.8 136.0	72.3 136.9	72.8 137.7	73.2 138.6	73.7 139.5	74.2 140.4	74.6 141.3	75.1 142.3	75.1 143.3	115
45	133.8 74.2 134.7	74.7 135.6	75.1 136.4	75.6 137.3	76.1 138.2	76.6 139.1	77.1 139.9	77.6 140.9	77.6 141.9	116
46	132.5 76.5 133.4	77.0 134.2	77.5 135.1	78.0 136.0	78.5 136.8	79.0 137.7	79.5 138.7	80.0 139.6	80.0 140.6	117
47	131.1 78.8 132.0	79.3 132.9	79.8 133.7	80.3 134.6	80.9 135.4	81.4 136.3	81.9 137.1	82.4 138.1	82.4 139.1	118
48	129.8 81.1 130.6	81.6 131.4	82.1 132.3	82.7 133.1	83.2 134.0	83.7 134.8	84.3 135.7	84.8 136.7	84.8 137.7	119
49	128.3 83.3 129.2	83.9 130.0	84.4 130.8	85.0 131.7	85.5 132.5	86.1 133.3	86.6 134.2	87.1 135.2	87.1 136.2	120
50	126.8 85.6 127.7	86.1 128.6	86.7 129.3	87.2 130.2	87.8 131.0	88.4 131.8	88.9 132.6	89.5 133.6	89.5 134.6	121
51	125.3 87.8 126.1	88.3 127.0	88.9 127.8	89.5 128.6	90.1 129.4	90.6 130.2	91.2 131.1	91.8 132.1	91.8 133.1	122
52	123.8 89.9 124.6	90.5 125.4	91.1 126.2	91.7 127.0	92.3 127.8	92.9 128.6	93.5 129.4	94.1 130.3	94.1 131.3	123
53	122.2 92.1 123.0	92.7 123.8	93.3 124.6	93.9 125.4	94.5 126.2	95.1 127.0	95.7 127.8	96.3 128.7	96.3 129.7	124
54	120.6 94.2 121.4	94.8 121.1	95.4 121.9	96.0 122.7	96.7 123.5	97.3 124.3	97.9 125.1	98.5 126.0	98.5 127.0	125
55	118.9 96.4 119.7	96.9 120.5	97.5 121.2	98.2 122.0	98.8 122.8	99.4 123.6	100.1 124.3	100.7 125.1	100.7 126.1	126
56	117.2 98.3 118.0	99.0 118.7	99.6 119.5	100.3 120.3	100.9 121.0	101.6 121.8	102.2 122.6	102.9 123.4	102.9 124.4	127
57	115.5 100.4 116.2	101.0 117.0	101.7 117.7	102.3 118.5	103.0 119.2	103.7 120.0	104.3 120.8	105.0 121.6	105.0 122.6	128
58	113.7 102.4 114.4	103.0 115.2	103.7 115.9	104.4 116.7	105.1 117.4	105.7 118.2	106.4 119.0	107.1 119.8	107.1 120.8	129
59	111.9 104.3 112.6	105.0 113.4	105.7 114.1	106.4 114.8	107.1 115.6	107.8 116.3	108.4 117.0	109.1 117.8	109.1 118.8	130
60	110.1 106.3 110.8	107.0 111.5	107.7 112.2	108.4 112.9	109.1 113.7	109.8 114.4	110.5 115.1	111.2 115.8	111.2 116.8	131
61	108.2 108.2 108.9	108.9 109.6	109.6 110.3	110.3 111.0	111.0 111.7	111.7 112.4	112.4 113.1	113.1 113.8	113.1 114.5	132

Traverse Table.

(x.)

Distance. 161		162		163		164		165		166		167		168		
Crs.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Crs.	
1	160.8 07.9	161.8 08.0	162.8 08.0	163.8 08.1	164.8 08.1	165.8 08.2	166.8 08.2	167.8 08.2	168.8 08.2	169.8 08.2	170.8 08.2	171.8 08.2	172.8 08.2	173.8 08.2	174.8 08.2	1
2	160.2 15.8	161.2 15.9	162.2 16.0	163.2 16.1	164.2 16.2	165.2 16.3	166.2 16.4	167.2 16.5	168.2 16.5	169.2 16.5	170.2 16.5	171.2 16.5	172.2 16.5	173.2 16.5	174.2 16.5	2
3	159.3 23.6	160.2 23.8	161.2 23.9	162.2 24.1	163.2 24.2	164.2 24.4	165.2 24.5	166.2 24.6	167.2 24.6	168.2 24.6	169.2 24.6	170.2 24.6	171.2 24.6	172.2 24.6	173.2 24.6	3
4	157.9 31.4	158.9 31.6	159.9 31.8	160.8 32.0	161.8 32.2	162.8 32.4	163.8 32.6	164.8 32.8	165.8 32.8	166.8 32.8	167.8 32.8	168.8 32.8	169.8 32.8	170.8 32.8	171.8 32.8	4
5	156.2 39.1	157.1 39.4	158.1 39.6	159.1 39.9	160.1 40.1	161.0 40.3	162.0 40.6	163.0 40.8	164.0 40.8	165.0 40.8	166.0 40.8	167.0 40.8	168.0 40.8	169.0 40.8	170.0 40.8	5
6	154.1 46.7	155.0 47.0	156.0 47.3	156.9 47.6	157.9 47.9	158.9 48.2	159.8 48.5	160.8 48.8	161.8 48.8	162.8 48.8	163.8 48.8	164.8 48.8	165.8 48.8	166.8 48.8	167.8 48.8	6
7	151.6 54.2	152.5 54.6	153.5 54.9	154.4 55.2	155.3 55.6	156.3 55.9	157.2 56.3	158.2 56.6	159.2 56.6	160.2 56.6	161.2 56.6	162.2 56.6	163.2 56.6	164.2 56.6	165.2 56.6	7
8	148.7 61.6	149.7 62.0	150.6 62.4	151.5 62.8	152.4 63.1	153.4 63.5	154.3 63.9	155.2 64.3	156.2 64.3	157.2 64.3	158.2 64.3	159.2 64.3	160.2 64.3	161.2 64.3	162.2 64.3	8
9	145.5 68.8	146.4 69.3	147.3 69.7	148.3 70.1	149.2 70.6	150.1 71.0	151.0 71.4	151.9 71.8	152.9 71.8	153.9 71.8	154.9 71.8	155.9 71.8	156.9 71.8	157.9 71.8	158.9 71.8	9
10	142.0 75.9	142.9 76.4	143.8 76.8	144.6 77.3	145.5 77.8	146.4 78.2	147.3 78.7	148.2 79.2	149.2 79.2	150.2 79.2	151.2 79.2	152.2 79.2	153.2 79.2	154.2 79.2	155.2 79.2	10
11	138.1 82.8	138.9 83.3	139.8 83.8	140.7 84.3	141.5 84.8	142.4 85.3	143.2 85.8	144.1 86.4	145.1 86.4	146.1 86.4	147.1 86.4	148.1 86.4	149.1 86.4	150.1 86.4	151.1 86.4	11
12	133.9 89.4	134.7 90.0	135.5 90.6	136.4 91.1	137.2 91.7	138.0 92.2	138.9 92.8	139.7 93.3	140.7 93.3	141.7 93.3	142.7 93.3	143.7 93.3	144.7 93.3	145.7 93.3	146.7 93.3	12
13	129.3 95.9	130.1 96.5	130.9 97.1	131.7 97.7	132.5 98.3	133.3 98.9	134.1 99.5	134.9 100.1	135.9 100.1	136.9 100.1	137.9 100.1	138.9 100.1	139.9 100.1	140.9 100.1	141.9 100.1	13
14	124.4 102.1	125.2 102.8	126.0 103.4	126.8 104.0	127.5 104.7	128.3 105.3	129.1 105.9	129.9 106.6	130.9 106.6	131.9 106.6	132.9 106.6	133.9 106.6	134.9 106.6	135.9 106.6	136.9 106.6	14
15	119.3 103.1	120.0 103.8	120.8 104.5	121.5 105.1	122.3 105.8	123.0 106.5	123.7 107.1	124.5 107.8	125.5 107.8	126.5 107.8	127.5 107.8	128.5 107.8	129.5 107.8	130.5 107.8	131.5 107.8	15
16	113.8 113.8	114.5 114.5	115.3 115.3	116.0 116.0	116.7 116.7	117.4 117.4	118.1 118.1	118.8 118.8	119.8 118.8	120.8 118.8	121.8 118.8	122.8 118.8	123.8 118.8	124.8 118.8	125.8 118.8	16
17	161.0 02.8	162.0 02.8	163.0 02.8	164.0 02.9	165.0 02.9	166.0 02.9	167.0 02.9	168.0 02.9	169.0 02.9	170.0 02.9	171.0 02.9	172.0 02.9	173.0 02.9	174.0 02.9	175.0 02.9	17
18	160.9 05.6	161.9 05.7	162.9 05.7	163.9 05.7	164.9 05.8	165.9 05.8	166.9 05.8	167.9 05.8	168.9 05.8	169.9 05.8	170.9 05.8	171.9 05.8	172.9 05.8	173.9 05.8	174.9 05.8	18
19	160.8 08.4	161.8 08.5	162.8 08.5	163.8 08.6	164.8 08.6	165.8 08.7	166.8 08.7	167.8 08.8	168.8 08.8	169.8 08.8	170.8 08.8	171.8 08.8	172.8 08.8	173.8 08.8	174.8 08.8	19
20	160.6 11.2	161.6 11.3	162.6 11.4	163.6 11.4	164.6 11.5	165.6 11.6	166.6 11.6	167.6 11.7	168.6 11.7	169.6 11.7	170.6 11.7	171.6 11.7	172.6 11.7	173.6 11.7	174.6 11.7	20
21	160.4 14.0	161.4 14.1	162.4 14.2	163.4 14.3	164.4 14.4	165.4 14.5	166.4 14.6	167.4 14.6	168.4 14.6	169.4 14.6	170.4 14.6	171.4 14.6	172.4 14.6	173.4 14.6	174.4 14.6	21
22	160.1 16.8	161.1 16.9	162.1 17.0	163.1 17.1	164.1 17.2	165.1 17.4	166.1 17.5	167.1 17.6	168.1 17.6	169.1 17.6	170.1 17.6	171.1 17.6	172.1 17.6	173.1 17.6	174.1 17.6	22
23	159.8 19.6	160.8 19.7	161.8 19.9	162.8 20.0	163.8 20.1	164.8 20.2	165.8 20.4	166.7 20.5	167.7 20.5	168.7 20.5	169.7 20.5	170.7 20.5	171.7 20.5	172.7 20.5	173.7 20.5	23
24	159.4 22.4	160.4 22.5	161.4 22.7	162.4 22.8	163.4 23.0	164.4 23.1	165.4 23.2	166.4 23.4	167.4 23.4	168.4 23.4	169.4 23.4	170.4 23.4	171.4 23.4	172.4 23.4	173.4 23.4	24
25	159.0 25.2	160.0 25.3	161.0 25.5	162.0 25.7	163.0 25.8	164.0 26.0	164.9 26.1	165.9 26.3	166.9 26.3	167.9 26.3	168.9 26.3	169.9 26.3	170.9 26.3	171.9 26.3	172.9 26.3	25
26	158.6 28.0	159.5 28.1	160.5 28.3	161.5 28.5	162.5 28.7	163.5 28.8	164.5 29.0	165.4 29.2	166.4 29.2	167.4 29.2	168.4 29.2	169.4 29.2	170.4 29.2	171.4 29.2	172.4 29.2	26
27	158.0 30.7	159.0 30.9	160.0 31.1	161.0 31.3	162.0 31.5	163.0 31.7	163.9 31.9	164.9 32.1	165.9 32.1	166.9 32.1	167.9 32.1	168.9 32.1	169.9 32.1	170.9 32.1	171.9 32.1	27
28	157.5 33.5	158.5 33.7	159.4 33.9	160.4 34.1	161.4 34.3	162.4 34.5	163.4 34.7	164.3 34.9	165.3 34.9	166.3 34.9	167.3 34.9	168.3 34.9	169.3 34.9	170.3 34.9	171.3 34.9	28
29	156.9 36.2	157.8 36.4	158.8 36.7	159.8 36.9	160.8 37.1	161.7 37.3	162.7 37.6	163.7 37.8	164.7 37.8	165.7 37.8	166.7 37.8	167.7 37.8	168.7 37.8	169.7 37.8	170.7 37.8	29
30	156.2 38.9	157.2 39.2	158.2 39.4	159.1 39.7	160.1 39.9	161.1 40.2	162.0 40.4	163.0 40.6	164.0 40.6	165.0 40.6	166.0 40.6	167.0 40.6	168.0 40.6	169.0 40.6	170.0 40.6	30
31	155.5 41.7	156.5 41.9	157.4 42.2	158.4 42.4	159.4 42.7	160.3 43.0	161.3 43.2	162.3 43.5	163.3 43.5	164.3 43.5	165.3 43.5	166.3 43.5	167.3 43.5	168.3 43.5	169.3 43.5	31
32	154.8 44.4	155.7 44.7	156.7 44.9	157.6 45.2	158.6 45.5	159.6 45.8	160.5 46.0	161.5 46.3	162.5 46.3	163.5 46.3	164.5 46.3	165.5 46.3	166.5 46.3	167.5 46.3	168.5 46.3	32
33	154.0 47.1	154.9 47.4	155.9 47.7	156.8 47.9	157.8 48.2	158.7 48.5	159.7 48.8	160.7 49.1	161.7 49.1	162.7 49.1	163.7 49.1	164.7 49.1	165.7 49.1	166.7 49.1	167.7 49.1	33
34	153.1 49.8	154.1 50.1	155.0 50.4	156.0 50.7	156.9 51.0	157.9 51.3	158.8 51.6	159.8 51.9	160.8 51.9	161.8 51.9	162.8 51.9	163.8 51.9	164.8 51.9	165.8 51.9	166.8 51.9	34
35	152.2 52.4	153.2 52.7	154.1 53.1	155.1 53.4	156.0 53.7	157.0 54.0	157.9 54.4	158.8 54.7	159.8 54.7	160.8 54.7	161.8 54.7	162.8 54.7	163.8 54.7	164.8 54.7	165.8 54.7	35
36	151.3 55.1	152.2 55.4	153.2 55.7	154.1 56.1	155.0 56.4	156.0 56.8	156.9 57.1	157.9 57.5	158.9 57.5	159.9 57.5	160.9 57.5	161.9 57.5	162.9 57.5	163.9 57.5	164.9 57.5	36
37	150.3 57.7	151.2 58.1	152.2 58.4	153.1 58.8	154.0 59.1	155.0 59.5	155.9 59.8	156.8 60.2	157.8 60.2	158.8 60.2	159.8 60.2	160.8 60.2	161.8 60.2	162.8 60.2	163.8 60.2	37
38	149.3 60.3	150.2 60.7	151.1 61.1	152.1 61.4	153.0 61.8	153.9 62.2	154.8 62.6	155.8 62.9	156.8 62.9	157.8 62.9	158.8 62.9	159.8 62.9	160.8 62.9	161.8 62.9	162.8 62.9	38
39	148.2 62.9	149.1 63.3	150.0 63.7	151.0 64.1	151.9 64.5	152.8 64.9	153.7 65.3	154.6 65.6	155.6 65.6	156.6 65.6	157.6 65.6	158.6 65.6	159.6 65.6	160.6 65.6	161.6 65.6	39
40	147.1 65.5	148.0 65.9	148.9 66.3	149.8 66.7	150.7 67.1	151.6 67.5	152.6 67.9	153.5 68.3	154.5 68.3	155.5 68.3	156.5 68.3	157.5 68.3	158.5 68.3	159.5 68.3	160.5 68.3	40
41	145.9 68.0	146.8 68.5	147.7 68.9	148.6 69.3	149.5 69.7	150.4 70.2	151.4 70.6	152.3 71.0	153.3 71.0	154.3 71.0	155.3 71.0	156.3 71.0	157.3 71.0	158.3 71.0	159.3 71.0	41
42	144.7 70.6	145.6 71.0	146.5 71.5	147.4 71.9	148.3 72.3	149.2 72.8	150.1 73.2	151.0 73.6	152.0 73.6	153.0 73.6	154.0 73.6	155.0 73.6	156.0 73.6	157.0 73.6	158.0 73.6	42
43	143.5 73.1	144.3 73.5	145.2 74.0	146.1 74.5	147.0 74.9	147.9 75.4	148.8 75.8	149.7 76.3	150.7 76.3	151.7 76.3	152.7 76.3	153.7 76.3	154.7 76.3	155.7 76.3	156.7 76.3	43
44	142.2 75.6	143.0 76.1	143.9 76.5	144.8 77.0	145.7 77.5	146.6 77.9	147.5 78.4	148.3 78.9	149.3 78.9	150.3 78.9	151.3 78.9	152.3 78.9	153.3 78.9	154.3 78.9	155.3 78.9	44
45	140.8 78.1	141.7 78.5	142.6 79.0	143.4 79.5	144.3 80.0	145.2 80.5	146.1 81.0	146.9 81.4	147.9 81.4	148.9 81.4	149.9 81.4	150.9 81.4	151.9 81.4	152.9 81.4	153.9 81.4	45
46	139.4 80.5	140.3 81.0	141.2 81.5	142.0 82.0	142.9 82.5	143.8 83.0	144.6 83.5	145.5 84.0	146.5 84.0	147.5 84.0	148.5 84.0	149.5 84.0	150.5 84.0	151.5 84.0	152.5 84.0	46
47	138.0 82.9	138.9 83.4	139.7 84.0	140.6 84.5	141.4 85.0	142.3 85.5	143.1 86.0	144.0 86.5	145.0 86.5	146.0 86.5	147.0 86.5	148.0 86.5	149.0 86.5	150.0 86.5	151.0 86.5	47
48	136.5 85.3	137.4 85.8	138.2 86.4	139.1 86.9	139.9 87.4	140.8 88.0	141.6 88.5	142.5 89.0	143.5 89.0	144.5 89.0	145.5 89.0	146.5 89.0	147.5 89.0	148.5 89.0	149.5 89.0	48
49	135.0 87.7	135.9 88.2	136.7													

Traverse Table.

(I.)

Distance. 169			170			171			172			173			174			175			176		
Cross.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Cross.		
1	168.8	08.3	169.8	08.3	170.8	08.4	171.8	08.4	172.8	08.5	173.8	08.5	174.8	08.6	175.8	08.6	176.8	08.6	177.8	08.6	71		
2	168.2	16.6	169.2	16.7	170.2	16.8	171.2	16.9	172.2	17.0	173.2	17.1	174.2	17.2	175.2	17.3	176.2	17.3	177.2	17.3	72		
3	167.2	24.8	168.2	24.9	169.1	25.1	170.1	25.2	171.1	25.4	172.1	25.5	173.1	25.7	174.1	25.8	175.1	25.8	176.1	25.8	73		
4	165.7	33.0	166.7	33.2	167.7	33.4	168.7	33.6	169.7	33.8	170.7	34.0	171.6	34.1	172.6	34.3	173.6	34.3	174.6	34.3	74		
5	163.9	41.1	164.9	41.3	165.9	41.6	166.8	41.8	167.8	42.0	168.8	42.3	169.8	42.5	170.7	42.8	171.7	42.8	172.7	42.8	75		
6	161.7	49.1	162.7	49.3	163.6	49.6	164.6	49.9	165.6	50.2	166.5	50.5	167.5	50.8	168.4	51.1	169.4	51.1	170.4	51.1	76		
7	159.1	56.9	160.1	57.3	161.0	57.6	161.9	57.9	162.9	58.3	163.8	58.6	164.8	59.0	165.7	59.3	166.7	59.3	167.7	59.3	77		
8	156.1	64.7	157.1	65.1	158.0	65.4	158.9	65.8	159.8	66.2	160.8	66.6	161.7	67.0	162.6	67.4	163.6	67.4	164.6	67.4	78		
9	152.8	72.3	153.7	72.7	154.6	73.1	155.5	73.6	156.4	74.0	157.3	74.4	158.2	74.8	159.1	75.3	160.1	75.3	161.1	75.3	79		
10	149.0	79.7	149.9	80.1	150.8	80.6	151.7	81.1	152.6	81.5	153.5	82.0	154.3	82.5	155.2	83.0	156.2	83.0	157.2	83.0	80		
11	145.0	86.9	145.8	87.4	146.7	87.9	147.5	88.4	148.4	88.9	149.2	89.4	150.1	90.0	151.0	90.5	152.0	90.5	153.0	90.5	81		
12	140.5	93.9	141.3	94.4	142.2	95.0	143.0	95.6	143.8	96.1	144.7	96.7	145.5	97.2	146.3	97.8	147.3	97.8	148.3	97.8	82		
13	135.7	100.7	136.5	101.3	137.3	101.9	138.1	102.5	138.9	103.1	139.8	103.7	140.6	104.2	141.4	104.8	142.3	104.8	143.3	104.8	83		
14	130.6	107.2	131.4	107.8	132.2	108.5	133.0	109.1	133.7	109.7	134.5	110.4	135.3	111.0	136.0	111.6	137.0	111.6	138.0	111.6	84		
15	125.2	113.5	126.0	114.2	126.7	114.8	127.4	115.5	128.2	116.2	128.9	116.8	129.7	117.5	130.4	118.2	131.4	118.2	132.4	118.2	85		
16	119.5	119.5	120.2	120.2	120.9	120.9	121.6	121.6	122.3	122.3	123.0	123.0	123.7	123.7	124.4	124.4	125.1	124.4	125.1	124.4	86		
17	119.5	119.5	120.2	120.2	120.9	120.9	121.6	121.6	122.3	122.3	123.0	123.0	123.7	123.7	124.4	124.4	125.1	124.4	125.1	124.4	87		
18	119.5	119.5	120.2	120.2	120.9	120.9	121.6	121.6	122.3	122.3	123.0	123.0	123.7	123.7	124.4	124.4	125.1	124.4	125.1	124.4	88		
19	119.5	119.5	120.2	120.2	120.9	120.9	121.6	121.6	122.3	122.3	123.0	123.0	123.7	123.7	124.4	124.4	125.1	124.4	125.1	124.4	89		
20	119.5	119.5	120.2	120.2	120.9	120.9	121.6	121.6	122.3	122.3	123.0	123.0	123.7	123.7	124.4	124.4	125.1	124.4	125.1	124.4	90		
21	119.5	119.5	120.2	120.2	120.9	120.9	121.6	121.6	122.3	122.3	123.0	123.0	123.7	123.7	124.4	124.4	125.1	124.4	125.1	124.4	91		
22	119.5	119.5	120.2	120.2	120.9	120.9	121.6	121.6	122.3	122.3	123.0	123.0	123.7	123.7	124.4	124.4	125.1	124.4	125.1	124.4	92		
23	119.5	119.5	120.2	120.2	120.9	120.9	121.6	121.6	122.3	122.3	123.0	123.0	123.7	123.7	124.4	124.4	125.1	124.4	125.1	124.4	93		
24	119.5	119.5	120.2	120.2	120.9	120.9	121.6	121.6	122.3	122.3	123.0	123.0	123.7	123.7	124.4	124.4	125.1	124.4	125.1	124.4	94		
25	119.5	119.5	120.2	120.2	120.9	120.9	121.6	121.6	122.3	122.3	123.0	123.0	123.7	123.7	124.4	124.4	125.1	124.4	125.1	124.4	95		
26	119.5	119.5	120.2	120.2	120.9	120.9	121.6	121.6	122.3	122.3	123.0	123.0	123.7	123.7	124.4	124.4	125.1	124.4	125.1	124.4	96		
27	119.5	119.5	120.2	120.2	120.9	120.9	121.6	121.6	122.3	122.3	123.0	123.0	123.7	123.7	124.4	124.4	125.1	124.4	125.1	124.4	97		
28	119.5	119.5	120.2	120.2	120.9	120.9	121.6	121.6	122.3	122.3	123.0	123.0	123.7	123.7	124.4	124.4	125.1	124.4	125.1	124.4	98		
29	119.5	119.5	120.2	120.2	120.9	120.9	121.6	121.6	122.3	122.3	123.0	123.0	123.7	123.7	124.4	124.4	125.1	124.4	125.1	124.4	99		
30	119.5	119.5	120.2	120.2	120.9	120.9	121.6	121.6	122.3	122.3	123.0	123.0	123.7	123.7	124.4	124.4	125.1	124.4	125.1	124.4	100		
31	119.5	119.5	120.2	120.2	120.9	120.9	121.6	121.6	122.3	122.3	123.0	123.0	123.7	123.7	124.4	124.4	125.1	124.4	125.1	124.4	101		
32	119.5	119.5	120.2	120.2	120.9	120.9	121.6	121.6	122.3	122.3	123.0	123.0	123.7	123.7	124.4	124.4	125.1	124.4	125.1	124.4	102		
33	119.5	119.5	120.2	120.2	120.9	120.9	121.6	121.6	122.3	122.3	123.0	123.0	123.7	123.7	124.4	124.4	125.1	124.4	125.1	124.4	103		
34	119.5	119.5	120.2	120.2	120.9	120.9	121.6	121.6	122.3	122.3	123.0	123.0	123.7	123.7	124.4	124.4	125.1	124.4	125.1	124.4	104		
35	119.5	119.5	120.2	120.2	120.9	120.9	121.6	121.6	122.3	122.3	123.0	123.0	123.7	123.7	124.4	124.4	125.1	124.4	125.1	124.4	105		
36	119.5	119.5	120.2	120.2	120.9	120.9	121.6	121.6	122.3	122.3	123.0	123.0	123.7	123.7	124.4	124.4	125.1	124.4	125.1	124.4	106		
37	119.5	119.5	120.2	120.2	120.9	120.9	121.6	121.6	122.3	122.3	123.0	123.0	123.7	123.7	124.4	124.4	125.1	124.4	125.1	124.4	107		
38	119.5	119.5	120.2	120.2	120.9	120.9	121.6	121.6	122.3	122.3	123.0	123.0	123.7	123.7	124.4	124.4	125.1	124.4	125.1	124.4	108		
39	119.5	119.5	120.2	120.2	120.9	120.9	121.6	121.6	122.3	122.3	123.0	123.0	123.7	123.7	124.4	124.4	125.1	124.4	125.1	124.4	109		
40	119.5	119.5	120.2	120.2	120.9	120.9	121.6	121.6	122.3	122.3	123.0	123.0	123.7	123.7	124.4	124.4	125.1	124.4	125.1	124.4	110		
41	119.5	119.5	120.2	120.2	120.9	120.9	121.6	121.6	122.3	122.3	123.0	123.0	123.7	123.7	124.4	124.4	125.1	124.4	125.1	124.4	111		
42	119.5	119.5	120.2	120.2	120.9	120.9	121.6	121.6	122.3	122.3	123.0	123.0	123.7	123.7	124.4	124.4	125.1	124.4	125.1	124.4	112		
43	119.5	119.5	120.2	120.2	120.9	120.9	121.6	121.6	122.3	122.3	123.0	123.0	123.7	123.7	124.4	124.4	125.1	124.4	125.1	124.4	113		
44	119.5	119.5	120.2	120.2	120.9	120.9	121.6	121.6	122.3	122.3	123.0	123.0	123.7	123.7	124.4	124.4	125.1	124.4	125.1	124.4	114		
45	119.5	119.5	120.2	120.2	120.9	120.9	121.6	121.6	122.3	122.3	123.0	123.0	123.7	123.7	124.4	124.4	125.1	124.4	125.1	124.4	115		
46	119.5	119.5	120.2	120.2	120.9	120.9	121.6	121.6	122.3	122.3	123.0	123.0	123.7	123.7	124.4	124.4	125.1	124.4	125.1	124.4	116		
47	119.5	119.5	120.2	120.2	120.9	120.9	121.6	121.6	122.3	122.3	123.0	123.0	123.7	123.7	124.4	124.4	125.1	124.4	125.1	124.4	117		
48	119.5	119.5	120.2	120.2	120.9	120.9	121.6	121.6	122.3	122.3	123.0	123.0	123.7	123.7	124.4	124.4	125.1	124.4	125.1	124.4	118		
49	119.5	119.5	120.2	120.2	120.9	120.9	121.6	121.6	122.3	122.3	123.0	123.0	123.7	123.7	124.4	124.4	125.1	124.4	125.1	124.4	119		
50	119.5	119.5	120.2	120.2	120.9	120.9	121.6	121.6	122.3	122.3	123.0	123.0	123.7	123.7	124.4	124.4	125.1	124.4	125.1	124.4	120		
51	119.5	119.5	120.2	120.2	120.9	120.9	121.6	121.6	122.3	122.3	123.0	123.0	123.7	123.7	124.4	124.4	125.1	124.4	125.1	124.4	121		
52	119.5	119.5	120.2	120.2	120.9	120.9	121.6	121.6	122.3	122.3	123.0	123.0	123.7	123.7	124.4	124.4	125.1	124.4	125.1	124.4	122		
53	119.5	119.5	120.2	120.2	120.9	120.9	121.6	121.6	122.3	122.3	123.0	123.0	123.7	123.7	124.4	124.4	125.1	124.4	125.1	124.4	123		
54	119.5	119.5	120.2	120.2	120.9	120.9	121.6	121.6	122.3	122.3	123.0	123.0	123.7	123.7	124.4	124.4	125.1	124.4	125.1	124.4	124		
55	119.5	119.5	120.2	120.2	120.9	120.9	121.6	121.6	122.3	122.3	123.0	123.0	123.7	123.7	124.4	124.4	125.1	124.4	125.1	124.4	125		
56	119.5	119.5	120.2	120.2	120.9	120.9	121.6	121.6	122.3	122.3	123.0	123.0	123.7	123.7	124.4	124.4	125.1	124.4	125.1	124.4	126		
57	119.5	119.																					

Traverse Table.

(x.)

Distance 177		178		179		180		181		182		183		1		Crs.
Dist.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Dist.	
176.8	08.7	177.8	08.7	178.8	08.8	179.8	08.8	180.8	08.9	181.8	08.9	182.8	09.0	183.8	09.0	73
176.1	17.4	177.1	17.4	178.1	17.5	179.1	17.6	180.1	17.7	181.1	17.8	182.1	17.9	183.1	18.0	74
175.1	26.0	176.1	26.1	177.1	26.3	178.0	26.4	179.0	26.6	180.0	26.7	181.0	26.8	182.0	27.0	75
173.6	34.5	174.6	34.7	175.6	34.9	176.5	35.1	177.5	35.3	178.5	35.5	179.5	35.7	180.5	35.9	76
171.7	43.0	172.7	43.3	173.6	43.5	174.6	43.7	175.6	44.0	176.5	44.2	177.5	44.5	178.5	44.7	77
169.8	51.4	170.3	51.7	171.3	52.0	172.3	52.2	173.2	52.5	174.2	52.8	175.1	53.1	176.1	53.4	78
166.6	59.6	167.6	60.0	168.5	60.3	169.5	60.6	170.4	61.0	171.4	61.3	172.3	61.6	173.2	62.0	79
163.5	67.7	164.5	68.1	165.4	68.5	166.3	68.9	167.2	69.3	168.2	69.7	169.1	70.0	170.0	70.4	80
160.0	75.7	160.9	76.1	161.8	76.5	162.7	77.0	163.6	77.4	164.5	77.8	165.4	78.3	166.3	78.7	81
156.1	83.4	157.0	83.9	157.9	84.4	158.8	84.8	159.6	85.3	160.5	85.8	161.4	86.3	162.3	86.7	82
151.8	91.0	152.7	91.5	153.5	92.0	154.4	92.5	155.3	93.0	156.1	93.6	157.0	94.1	157.8	94.6	83
147.2	98.3	148.0	98.9	148.8	99.4	149.7	100.0	150.5	100.6	151.3	101.1	152.2	101.7	153.0	102.2	84
142.2	105.4	143.0	106.0	143.8	106.6	144.6	107.2	145.4	107.8	146.2	108.3	147.0	109.0	147.8	109.6	85
136.8	112.3	137.6	112.9	138.4	113.6	139.1	114.2	139.9	114.8	140.7	115.5	141.5	116.1	142.2	116.7	86
131.1	118.9	131.9	119.5	132.6	120.2	133.4	120.9	134.1	121.5	134.8	122.2	135.6	122.9	136.3	123.6	87
125.2	125.2	125.9	125.9	126.6	126.6	127.3	127.3	128.0	128.0	128.7	128.7	129.4	129.4	130.1	130.1	88
177.0	03.1	178.0	03.1	179.0	03.1	180.0	03.1	181.0	03.2	182.0	03.2	183.0	03.2	184.0	03.2	89
176.9	06.2	177.9	06.2	178.9	06.2	179.9	06.3	180.9	06.3	181.9	06.4	182.9	06.4	183.9	06.4	90
176.8	09.3	177.8	09.3	178.8	09.4	179.8	09.4	180.8	09.5	181.8	09.5	182.7	09.6	183.7	09.6	91
176.6	12.3	177.6	12.4	178.6	12.5	179.6	12.6	180.6	12.6	181.6	12.7	182.6	12.8	183.6	12.8	92
176.3	15.4	177.3	15.5	178.3	15.6	179.3	15.7	180.3	15.8	181.3	15.9	182.3	15.9	183.3	16.0	93
176.0	18.5	177.0	18.6	178.0	18.7	179.0	18.8	180.0	18.9	181.0	19.0	182.0	19.1	183.0	19.2	94
175.7	21.6	176.7	21.7	177.7	21.8	178.7	21.9	179.7	22.1	180.6	22.2	181.6	22.3	182.6	22.4	95
175.3	24.6	176.3	24.8	177.3	24.9	178.3	25.1	179.2	25.2	180.2	25.3	181.2	25.5	182.2	25.6	96
174.8	27.7	175.8	27.8	176.8	28.0	177.8	28.2	178.8	28.3	179.8	28.5	180.7	28.6	181.7	28.8	97
174.3	30.7	175.3	30.9	176.3	31.1	177.3	31.3	178.3	31.4	179.2	31.6	180.2	31.8	181.2	32.0	98
173.7	33.8	174.7	34.0	175.7	34.2	176.7	34.3	177.7	34.5	178.7	34.7	179.6	34.9	180.6	35.1	99
173.1	36.8	174.1	37.0	175.1	37.2	176.1	37.4	177.0	37.6	178.0	37.8	179.0	38.0	180.0	38.3	100
172.5	39.8	173.4	40.0	174.4	40.3	175.4	40.5	176.4	40.7	177.3	40.9	178.3	41.2	179.3	41.4	101
171.7	42.8	172.7	43.1	173.7	43.3	174.7	43.5	175.6	43.8	176.6	44.0	177.6	44.3	178.5	44.5	102
171.0	45.8	171.9	46.1	172.9	46.3	173.9	46.6	174.8	46.8	175.8	47.1	176.8	47.4	177.7	47.6	103
170.1	48.8	171.1	49.1	172.1	49.3	173.0	49.6	174.0	49.9	174.9	50.2	175.9	50.4	176.9	50.7	104
169.3	51.7	170.2	52.0	171.2	52.3	172.1	52.6	173.1	52.9	174.0	53.2	175.0	53.5	176.0	53.8	105
168.3	54.7	169.3	55.0	170.2	55.3	171.2	55.6	172.1	55.9	173.1	56.2	174.0	56.6	175.0	56.9	106
167.4	57.6	168.3	58.0	169.2	58.3	170.2	58.6	171.1	58.9	172.1	59.3	173.0	59.6	174.0	59.9	107
166.3	60.5	167.3	60.9	168.2	61.2	169.1	61.6	170.1	61.9	171.0	62.2	172.0	62.6	172.9	62.9	108
165.2	63.4	166.2	63.8	167.1	64.1	168.0	64.5	169.0	64.9	169.9	65.2	170.8	65.6	171.8	65.9	109
164.1	66.3	165.0	66.7	166.0	67.1	166.9	67.4	167.8	67.8	168.7	68.2	169.7	68.6	170.6	68.9	110
162.9	69.2	163.8	69.6	164.8	69.9	165.7	70.3	166.6	70.7	167.5	71.1	168.5	71.5	169.4	71.9	111
161.7	72.0	162.6	72.4	163.5	72.8	164.4	73.2	165.4	73.6	166.3	74.0	167.2	74.4	168.1	74.8	112
160.4	74.8	161.3	75.2	162.2	75.6	163.1	76.1	164.0	76.5	164.9	76.9	165.9	77.3	166.8	77.8	113
159.1	77.6	160.0	78.0	160.9	78.5	161.8	78.9	162.7	79.3	163.6	79.8	164.5	80.2	165.4	80.7	114
157.7	80.4	158.6	80.8	159.5	81.3	160.4	81.7	161.3	82.2	162.2	82.6	163.1	83.1	163.9	83.5	115
156.3	83.1	157.2	83.6	158.0	84.0	158.9	84.5	159.8	85.0	160.7	85.4	161.6	85.9	162.5	86.4	116
154.8	85.8	155.7	86.3	156.6	86.8	157.4	87.3	158.3	87.8	159.2	88.2	160.1	88.7	160.9	89.2	117
153.3	88.5	154.2	89.0	155.0	89.5	155.9	90.0	156.8	90.5	157.6	91.0	158.5	91.5	159.3	92.0	118
151.7	91.2	152.6	91.7	153.4	92.2	154.3	92.7	155.1	93.2	156.0	93.7	156.9	94.3	157.7	94.8	119
150.1	93.8	151.0	94.3	151.8	94.9	152.6	95.4	153.5	95.9	154.3	96.4	155.2	97.0	156.0	97.5	120
148.4	96.4	149.3	96.9	150.1	97.5	151.0	98.0	151.8	98.6	152.6	99.1	153.6	99.7	154.3	100.2	121
146.7	99.0	147.6	99.5	148.4	100.1	149.2	100.7	150.1	101.2	150.9	101.8	151.7	102.3	152.5	102.9	122
145.0	101.5	145.8	102.1	146.6	102.7	147.4	103.2	148.3	103.8	149.1	104.4	149.9	105.0	150.7	105.6	123
143.2	104.0	144.0	104.6	144.8	105.2	145.6	105.8	146.4	106.4	147.2	107.0	148.1	107.6	148.9	108.2	124
141.4	106.5	142.2	107.1	143.0	107.7	143.8	108.3	144.6	108.9	145.4	109.9	146.2	110.1	146.9	110.7	125
139.5	109.0	140.3	109.6	141.1	110.2	141.8	110.8	142.6	111.4	143.4	112.1	144.2	112.7	145.0	113.3	126
137.6	111.4	138.3	112.0	139.1	112.6	139.9	113.3	140.7	113.9	141.4	114.5	142.2	115.2	143.0	115.6	127
135.6	113.8	136.4	114.4	137.1	115.1	137.9	115.7	138.7	116.3	139.4	117.0	140.2	117.6	141.0	118.3	128
133.6	116.1	134.3	116.8	135.1	117.4	135.8	118.1	136.6	118.7	137.4	119.4	138.9	120.1	138.9	120.7	129
131.5	118.4	132.3	119.1	133.8	119.8	133.8	120.4	134.5	121.1	135.3	121.8	136.0	122.5	136.7	123.1	130
129.4	120.7	130.2	121.4	130.9	122.1	131.6	122.8	132.4	123.4	133.1	124.1	133.8	124.8	134.6	125.5	131
127.3	123.0	128.0	123.6	128.8	124.3	129.5	125.0	130.2	125.7	130.9	126.4	131.6	127.1	132.4	127.8	132
125.2	125.2	125.9	125.9	126.6	126.6	127.3	127.3	128.0	128.0	128.7	128.7	129.4	129.4	130.1	130.1	133

Traverse Table.

(x)

Distance.		185	186	187	188	189	190	191	192									
Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.							
1	184.8	09.1	185.8	09.1	186.8	09.2	187.8	09.3	188.8	09.3	189.8	09.4	191.8	09.4	191.8	09.4	191.8	09.4
2	184.1	18.1	185.1	18.2	186.1	18.3	187.1	18.4	188.1	18.5	189.1	18.6	190.1	18.7	191.1	18.8	192.1	18.8
3	183.0	27.1	184.0	27.3	185.0	27.4	186.0	27.6	187.0	27.7	187.9	27.9	188.9	28.0	189.9	28.2	190.9	28.2
4	181.4	36.1	182.4	36.3	183.4	36.5	184.4	36.7	185.4	36.9	186.3	37.1	187.3	37.3	188.3	37.5	189.3	37.5
5	179.5	45.0	180.4	45.2	181.4	45.4	182.4	45.7	183.3	45.9	184.3	46.2	185.3	46.4	186.3	46.7	187.3	46.7
6	177.0	53.7	178.0	54.0	179.0	54.3	179.9	54.6	180.9	54.9	181.8	55.1	182.8	55.4	183.7	55.7	184.7	55.7
7	174.2	62.3	175.1	62.7	176.1	63.0	177.0	63.3	177.9	63.7	178.9	64.0	179.8	64.3	180.8	64.7	181.8	64.7
8	170.9	70.8	171.8	71.2	172.8	71.6	173.7	71.9	174.6	72.3	175.5	72.7	176.5	73.1	177.4	73.5	178.4	73.5
9	167.2	79.1	168.1	79.5	169.0	80.0	169.9	80.4	170.9	80.8	171.8	81.2	172.7	81.7	173.6	82.1	174.5	82.1
10	163.2	87.2	164.0	87.7	164.9	88.1	165.8	88.6	166.7	89.1	167.6	89.5	168.5	90.0	169.3	90.5	170.3	90.5
11	158.7	95.1	159.5	95.6	160.4	96.1	161.2	96.6	162.1	97.2	163.0	97.7	164.0	98.2	164.7	98.7	165.5	98.7
12	153.8	102.8	154.6	103.3	155.5	103.9	156.3	104.4	157.1	105.0	158.0	105.6	159.0	106.1	159.6	106.7	160.5	106.7
13	148.6	110.2	149.4	110.8	150.2	111.4	151.0	112.0	151.8	112.6	152.6	113.2	153.4	113.8	154.2	114.4	155.0	114.4
14	143.0	117.4	143.8	118.0	144.5	118.6	145.3	119.3	146.1	119.9	146.9	120.5	147.6	121.2	148.4	121.8	149.0	121.8
15	137.1	124.2	137.8	124.9	138.6	125.6	139.3	126.2	140.0	126.9	140.8	127.6	141.5	128.3	142.3	128.9	143.0	128.9
16	130.8	130.8	131.5	131.5	132.2	132.2	132.9	132.9	133.6	133.6	134.3	134.3	135.1	135.1	135.8	135.8	136.5	135.8
17	125.0	137.5	125.7	138.2	126.4	138.9	127.1	139.6	127.8	140.3	128.5	141.0	129.2	141.7	130.0	142.4	130.7	143.1
18	118.9	143.8	119.6	144.5	120.3	145.2	121.0	145.9	121.7	146.6	122.4	147.3	123.1	148.0	123.8	148.7	124.5	149.4
19	112.8	149.7	113.5	150.4	114.2	151.1	114.9	151.8	115.6	152.5	116.3	153.2	117.0	153.9	117.7	154.6	118.4	155.3
20	106.7	155.4	107.4	156.1	108.1	156.8	108.8	157.5	109.5	158.2	110.2	158.9	110.9	159.6	111.6	160.3	112.3	161.0
21	100.6	161.1	101.3	161.8	102.0	162.5	102.7	163.2	103.4	163.9	104.1	164.6	104.8	165.3	105.5	166.0	106.2	166.7
22	94.5	166.8	95.2	167.5	95.9	168.2	96.6	168.9	97.3	169.6	98.0	170.3	98.7	171.0	99.4	171.7	100.1	172.4
23	88.4	172.3	89.1	173.0	89.8	173.7	90.5	174.4	91.2	175.1	91.9	175.8	92.6	176.5	93.3	177.2	94.0	177.9
24	82.3	178.0	83.0	178.7	83.7	179.4	84.4	180.1	85.1	180.8	85.8	181.5	86.5	182.2	87.2	182.9	87.9	183.6
25	76.2	183.5	76.9	184.2	77.6	184.9	78.3	185.6	79.0	186.3	79.7	187.0	80.4	187.7	81.1	188.4	81.8	189.1
26	70.1	189.0	70.8	189.7	71.5	190.4	72.2	191.1	72.9	191.8	73.6	192.5	74.3	193.2	75.0	193.9	75.7	194.6
27	64.0	194.5	64.7	195.2	65.4	195.9	66.1	196.6	66.8	197.3	67.5	198.0	68.2	198.7	68.9	199.4	69.6	200.1
28	57.9	200.0	58.6	200.7	59.3	201.4	60.0	202.1	60.7	202.8	61.4	203.5	62.1	204.2	62.8	204.9	63.5	205.6
29	51.8	205.5	52.5	206.2	53.2	206.9	53.9	207.6	54.6	208.3	55.3	209.0	56.0	209.7	56.7	210.4	57.4	211.1
30	45.7	211.0	46.4	211.7	47.1	212.4	47.8	213.1	48.5	213.8	49.2	214.5	49.9	215.2	50.6	215.9	51.3	216.6
31	39.6	216.5	40.3	217.2	41.0	217.9	41.7	218.6	42.4	219.3	43.1	220.0	43.8	220.7	44.5	221.4	45.2	222.1
32	33.5	222.0	34.2	222.7	34.9	223.4	35.6	224.1	36.3	224.8	37.0	225.5	37.7	226.2	38.4	226.9	39.1	227.6
33	27.4	227.5	28.1	228.2	28.8	228.9	29.5	229.6	30.2	230.3	30.9	231.0	31.6	231.7	32.3	232.4	33.0	233.1
34	21.3	233.0	22.0	233.7	22.7	234.4	23.4	235.1	24.1	235.8	24.8	236.5	25.5	237.2	26.2	237.9	26.9	238.6
35	15.2	238.5	15.9	239.2	16.6	239.9	17.3	240.6	18.0	241.3	18.7	242.0	19.4	242.7	20.1	243.4	20.8	244.1
36	9.1	244.0	9.8	244.7	10.5	245.4	11.2	246.1	11.9	246.8	12.6	247.5	13.3	248.2	14.0	248.9	14.7	249.6
37	3.0	249.5	3.7	250.2	4.4	250.9	5.1	251.6	5.8	252.3	6.5	253.0	7.2	253.7	7.9	254.4	8.6	255.1
38	0.0	255.0	0.7	255.7	1.4	256.4	2.1	257.1	2.8	257.8	3.5	258.5	4.2	259.2	4.9	259.9	5.6	260.6
39	0.0	260.0	0.7	260.7	1.4	261.4	2.1	262.1	2.8	262.8	3.5	263.5	4.2	264.2	4.9	264.9	5.6	265.6
40	0.0	265.0	0.7	265.7	1.4	266.4	2.1	267.1	2.8	267.8	3.5	268.5	4.2	269.2	4.9	269.9	5.6	270.6
41	0.0	270.0	0.7	270.7	1.4	271.4	2.1	272.1	2.8	272.8	3.5	273.5	4.2	274.2	4.9	274.9	5.6	275.6
42	0.0	275.0	0.7	275.7	1.4	276.4	2.1	277.1	2.8	277.8	3.5	278.5	4.2	279.2	4.9	279.9	5.6	280.6
43	0.0	280.0	0.7	280.7	1.4	281.4	2.1	282.1	2.8	282.8	3.5	283.5	4.2	284.2	4.9	284.9	5.6	285.6
44	0.0	285.0	0.7	285.7	1.4	286.4	2.1	287.1	2.8	287.8	3.5	288.5	4.2	289.2	4.9	289.9	5.6	290.6
45	0.0	290.0	0.7	290.7	1.4	291.4	2.1	292.1	2.8	292.8	3.5	293.5	4.2	294.2	4.9	294.9	5.6	295.6
46	0.0	295.0	0.7	295.7	1.4	296.4	2.1	297.1	2.8	297.8	3.5	298.5	4.2	299.2	4.9	299.9	5.6	300.6
47	0.0	300.0	0.7	300.7	1.4	301.4	2.1	302.1	2.8	302.8	3.5	303.5	4.2	304.2	4.9	304.9	5.6	305.6
48	0.0	305.0	0.7	305.7	1.4	306.4	2.1	307.1	2.8	307.8	3.5	308.5	4.2	309.2	4.9	309.9	5.6	310.6
49	0.0	310.0	0.7	310.7	1.4	311.4	2.1	312.1	2.8	312.8	3.5	313.5	4.2	314.2	4.9	314.9	5.6	315.6
50	0.0	315.0	0.7	315.7	1.4	316.4	2.1	317.1	2.8	317.8	3.5	318.5	4.2	319.2	4.9	319.9	5.6	320.6
51	0.0	320.0	0.7	320.7	1.4	321.4	2.1	322.1	2.8	322.8	3.5	323.5	4.2	324.2	4.9	324.9	5.6	325.6
52	0.0	325.0	0.7	325.7	1.4	326.4	2.1	327.1	2.8	327.8	3.5	328.5	4.2	329.2	4.9	329.9	5.6	330.6
53	0.0	330.0	0.7	330.7	1.4	331.4	2.1	332.1	2.8	332.8	3.5	333.5	4.2	334.2	4.9	334.9	5.6	335.6
54	0.0	335.0	0.7	335.7	1.4	336.4	2.1	337.1	2.8	337.8	3.5	338.5	4.2	339.2	4.9	339.9	5.6	340.6
55	0.0	340.0	0.7	340.7	1.4	341.4	2.1	342.1	2.8	342.8	3.5	343.5	4.2	344.2	4.9	344.9	5.6	345.6
56	0.0	345.0	0.7	345.7	1.4	346.4	2.1	347.1	2.8	347.8	3.5	348.5	4.2	349.2	4.9	349.9	5.6	350.6
57	0.0	350.0	0.7	350.7	1.4	351.4	2.1	352.1	2.8	352.8	3.5	353.5	4.2	354.2	4.9	354.9	5.6	355.6
58	0.0	355.0	0.7	355.7	1.4	356.4	2.1	357.1	2.8	357.8	3.5	358.5	4.2	359.2	4.9	359.9	5.6	360.6
59	0.0	360.0	0.7	360.7	1.4	361.4	2.1	362.1	2.8	362.8	3.5	363.5	4.2	364.2	4.9	364.9	5.6	365.6
60	0.0	365.0	0.7	365.7	1.4	366.4	2.1	367.1	2.8	367.8	3.5	368.5	4.2	369.2	4.9	369.9	5.6	370.6
61	0.0	370.0	0.7	370.7	1.4	371.4	2.1	372.1	2.8	372.8	3.5	373.5	4.2	374.2	4.9	374.9	5.6	375.6
62	0.0	375.0	0.7	375.7	1.4	376.4	2.1	377.1	2.8	377.8	3.5	378.5	4.2	379.2	4.9	379.9	5.6	380.6
63	0.0	380.0	0.7	380.7	1.4	381.4	2.1	382.1	2.8	382.8	3.5	383.5	4.2	384.2	4.9	384.9	5.6	385.6
64	0.0	385.0	0.7	385.7	1.4	386.4	2.1	387.1	2.8	387.8	3.5	388.5	4.2	389.2	4.9	389.9	5.6	390.6
65	0.0	390.0	0.7	390.7	1.4	391.4	2.1	392.1	2.8	392.8	3.5	393.5	4.2	394.2	4.9	394.9	5.6	395.6
66	0.0	395.0	0.7	395.7	1.4	396.4	2.1	397.1	2.8	397.8	3.5	398.5	4.2	399.2	4.9	399.9	5.6	400.6
67	0.0	400.0	0.7	400.7	1.4	401.4	2.1	402.1	2.8	402.8	3.5	403.5	4.2	404.2	4.9	404.9	5.6	405.6
68	0.0	405.0	0.7	405.7	1.4	406.4	2.1	407.1	2.8	407.8	3.5	408.5	4.2	409.2	4.9	409.9	5.6	410.6
69	0.0	410.0	0.7	410.7	1.4													

(x.)		Traverse Table.																			
Distance.		193		194		195		196		197		198		199		200					
Cr.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Cr.		
1	192.8	09.5	193.8	09.5	194.8	09.6	195.8	09.6	196.8	09.7	197.8	09.7	198.8	09.8	199.8	09.8	200.8	09.8	1		
2	192.1	18.9	193.1	19.0	194.1	19.1	195.1	19.2	196.1	19.3	197.0	19.4	198.0	19.5	199.0	19.6	200.0	19.6	2		
3	190.9	28.3	191.9	28.5	192.9	28.6	193.9	28.8	194.9	28.9	195.9	29.0	196.8	29.2	197.8	29.3	198.8	29.4	3		
4	189.3	37.7	190.3	37.8	191.2	38.0	192.2	38.2	193.2	38.4	194.2	38.6	195.2	38.8	196.2	39.0	197.2	39.1	4		
5	187.2	46.9	188.2	47.1	189.2	47.4	190.1	47.6	191.1	47.9	192.1	48.1	193.0	48.4	194.0	48.6	195.0	48.8	5		
6	184.7	56.0	185.7	56.3	186.6	56.6	187.6	56.9	188.5	57.2	189.5	57.5	190.4	57.8	191.4	58.1	192.4	58.4	6		
7	181.7	65.0	182.7	65.4	183.6	65.7	184.5	66.0	185.5	66.4	186.4	66.7	187.4	67.0	188.3	67.4	189.3	67.8	7		
8	178.3	73.9	179.2	74.2	180.2	74.6	181.1	75.0	182.0	75.4	182.9	75.8	183.9	76.2	184.8	76.5	185.8	76.9	8		
9	174.5	82.6	175.4	83.0	176.3	83.4	177.2	83.8	178.1	84.2	179.0	84.7	179.9	85.1	180.8	85.5	181.8	85.9	9		
10	170.2	91.0	171.1	91.4	172.0	91.9	172.9	92.4	173.7	92.9	174.6	93.3	175.5	93.8	176.4	94.3	177.4	94.7	10		
11	165.5	99.2	166.4	99.7	167.3	100.2	168.1	100.8	169.0	101.3	169.8	101.8	170.7	102.3	171.5	102.8	172.8	103.2	11		
12	160.5	107.2	161.3	107.8	162.1	108.3	163.0	108.9	163.8	109.4	164.6	110.0	165.5	110.6	166.3	111.1	167.3	111.7	12		
13	155.0	115.0	155.8	115.6	156.6	116.2	157.4	116.8	158.2	117.4	159.0	118.0	159.8	118.5	160.6	119.1	161.6	119.7	13		
14	149.2	122.4	150.0	123.1	150.7	123.7	151.5	124.3	152.3	125.0	153.1	125.6	153.8	126.2	154.6	126.9	156.6	127.5	14		
15	143.0	129.6	143.7	130.3	144.5	130.9	145.2	131.6	146.0	132.3	146.7	133.0	147.4	133.6	148.2	134.3	149.9	135.0	15		
16	136.5	136.5	137.2	137.2	137.9	137.9	138.6	138.6	139.3	139.3	140.0	140.0	140.7	140.7	141.4	141.4	142.1	142.1	16		
17	133.0	03.4	134.0	03.4	135.0	03.4	136.0	03.4	137.0	03.4	138.0	03.5	139.0	03.5	140.0	03.5	141.0	03.5	17		
18	132.9	06.7	133.9	06.8	134.9	06.8	135.9	06.8	136.9	06.9	137.9	06.9	138.9	06.9	139.9	07.0	140.9	07.0	18		
19	132.7	10.1	133.7	10.2	134.7	10.2	135.7	10.3	136.7	10.3	137.7	10.4	138.7	10.4	139.7	10.5	140.7	10.5	19		
20	132.5	13.5	133.5	13.6	134.5	13.6	135.5	13.7	136.5	13.7	137.5	13.8	138.5	13.9	139.5	14.0	140.5	14.0	20		
21	132.3	16.8	133.3	16.9	134.3	17.0	135.3	17.1	136.3	17.2	137.2	17.3	138.2	17.3	139.2	17.4	140.2	17.4	21		
22	131.9	20.2	132.9	20.3	133.9	20.4	134.9	20.5	135.9	20.6	136.9	20.7	137.9	20.8	138.9	20.9	139.9	21.0	22		
23	131.6	23.5	132.6	23.6	133.6	23.6	134.6	23.8	135.6	24.0	136.6	24.1	137.6	24.3	138.6	24.4	139.6	24.5	23		
24	131.1	26.9	132.1	27.0	133.1	27.1	134.1	27.3	135.1	27.4	136.1	27.6	137.1	27.7	138.1	27.8	139.1	27.9	24		
25	130.6	30.2	131.6	30.3	132.6	30.3	133.6	30.7	134.6	30.8	135.6	31.0	136.6	31.1	137.6	31.3	138.6	31.4	25		
26	130.1	33.5	131.1	33.7	132.0	33.8	133.0	34.0	134.0	34.2	135.0	34.4	136.0	34.6	137.0	34.7	138.0	34.9	26		
27	129.5	36.8	130.4	37.0	131.4	37.2	132.4	37.4	133.4	37.6	134.4	37.8	135.4	38.0	136.3	38.2	137.3	38.4	27		
28	128.8	40.1	129.8	40.3	130.7	40.5	131.7	40.8	132.7	41.0	133.7	41.2	134.7	41.4	135.6	41.6	136.6	41.8	28		
29	128.1	43.4	129.0	43.6	130.0	43.9	131.0	44.1	132.0	44.3	133.0	44.5	134.0	44.8	135.0	45.0	136.0	45.2	29		
30	127.3	46.7	128.2	46.9	129.2	47.2	130.2	47.4	131.1	47.7	132.1	47.9	133.1	48.1	134.1	48.4	135.1	48.6	30		
31	126.4	50.0	127.4	50.2	128.4	50.5	129.3	50.7	130.3	51.0	131.3	51.2	132.3	51.5	133.2	51.8	134.2	52.0	31		
32	125.5	53.2	126.5	53.5	127.4	53.7	128.4	54.0	129.4	54.3	130.3	54.6	131.3	54.9	132.2	55.1	133.2	55.4	32		
33	124.6	56.4	125.5	56.7	126.5	57.0	127.4	57.3	128.4	57.6	129.3	57.9	130.3	58.2	131.2	58.5	132.2	58.8	33		
34	123.6	59.6	124.5	59.9	125.5	60.3	126.4	60.6	127.4	60.9	128.3	61.2	129.3	61.5	130.2	61.8	131.2	62.1	34		
35	122.5	62.9	123.4	63.2	124.4	63.5	125.3	63.8	126.3	64.1	127.2	64.5	128.2	64.8	129.1	65.1	130.1	65.4	35		
36	121.4	66.0	122.3	66.4	123.2	66.7	124.2	67.0	125.1	67.4	126.1	67.7	127.0	68.1	128.9	68.4	129.8	68.8	36		
37	120.2	69.2	121.1	69.5	122.0	69.9	123.0	70.2	124.0	70.6	125.0	71.0	126.0	71.3	127.2	71.7	128.1	72.0	37		
38	119.0	72.3	120.0	72.7	121.0	73.0	122.0	73.4	123.0	73.8	124.0	74.2	125.0	74.5	126.0	74.9	127.0	75.2	38		
39	117.7	75.4	118.7	75.8	119.7	76.2	120.7	76.6	121.7	77.0	122.7	77.4	123.7	77.8	124.7	78.1	125.7	78.5	39		
40	116.3	78.5	117.3	78.9	118.3	79.3	119.3	79.7	120.3	80.1	121.3	80.5	122.3	80.9	123.3	81.3	124.3	81.7	40		
41	114.9	81.6	115.8	82.0	116.8	82.4	117.8	82.8	118.8	83.3	119.8	83.7	120.8	84.1	121.8	84.5	122.8	84.9	41		
42	113.5	84.6	114.4	85.0	115.4	85.5	116.4	85.9	117.4	86.4	118.4	86.8	119.4	87.2	120.4	87.7	121.4	88.1	42		
43	112.0	87.6	113.0	88.1	114.0	88.5	115.0	89.0	116.0	89.4	117.0	89.9	118.0	90.3	119.3	90.8	120.3	91.2	43		
44	110.4	90.6	111.5	91.1	112.5	91.5	113.5	92.0	114.5	92.5	115.5	93.0	116.5	93.5	117.5	94.0	118.5	94.9	44		
45	108.8	93.6	109.7	94.1	110.7	94.5	111.7	95.0	112.7	95.5	113.7	96.0	114.7	96.5	115.7	97.0	118.5	98.0	45		
46	107.1	96.5	108.0	97.0	109.0	97.5	110.0	98.0	111.0	98.5	112.0	99.0	113.0	99.5	114.5	100.0	115.5	100.0	46		
47	105.4	99.4	106.3	99.9	107.3	100.4	108.0	100.9	109.9	101.5	102.9	102.0	103.0	103.5	104.5	105.0	110.5	105.0	47		
48	103.7	102.3	104.5	102.9	105.4	103.3	106.2	103.9	106.7	104.4	107.9	104.9	108.4	105.5	109.9	106.0	112.0	106.0	48		
49	101.9	105.1	106.7	105.7	107.3	106.2	108.4	106.7	109.2	107.3	109.6	107.8	109.9	108.4	110.7	108.9	112.0	108.9	49		
50	100.0	107.9	109.0	108.5	109.7	109.0	111.3	109.6	110.3	108.4	110.7	108.6	110.9	109.3	111.6	109.9	112.0	109.9	50		
51	98.1	110.7	111.8	111.3	112.5	111.8	114.1	112.4	113.0	110.3	112.6	110.6	112.9	111.1	113.4	111.7	112.0	111.7	51		
52	96.1	113.4	114.5	114.0	115.2	114.6	116.9	115.2	115.9	113.2	116.2	114.2	116.5	114.5	116.8	115.1	112.0	115.1	52		
53	94.1	116.2	117.3	116.8	118.0	117.4	119.7	118.0	118.7	116.0	119.0	117.0	119.3	117.3	119.6	117.9	112.0	117.9	53		
54	92.1	118.9	119.9	119.4	120.7	120.1	122.4	120.7	121.3	118.6	121.6	119.6	121.9	119.9	122.2	120.5	112.0	120.5	54		
55	90.0	121.5	122.6	122.1	123.4	122.8	125.1	123.3	124.0	121.3	124.3	122.3	124.6	122.6	124.9	123.2	112.0	123.2	55		
56	87.8	124.1	124.8	124.7	124.9	125.3	125.0	126.0	125.9	126.6	125.7	127.3	125.4	127.9	125.3	128.6	125.0	128.6	56		
57	87																				

Traverse Table.

(x.)

Distance. 201			202			203			204			205			206			207			208		
Cont.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Cont.		
1	200.8	09.9	201.8	09.9	202.8	10.0	203.8	10.0	204.8	10.1	205.8	10.1	206.8	10.2	207.8	10.2	208.8	10.3	209.8	10.3	210.8		
	200.0	19.7	201.0	19.8	202.0	19.9	203.0	20.0	204.0	20.1	205.0	20.2	206.0	20.3	207.0	20.4	208.0	20.5	209.0	20.6	210.0		
	199.8	29.5	199.8	29.6	200.8	29.6	201.8	29.9	202.8	30.1	203.8	30.2	204.8	30.4	205.7	30.5	206.7	30.6	207.7	30.7	208.7		
	197.1	39.2	198.1	39.4	199.1	39.6	200.1	39.8	201.1	40.0	202.0	40.2	203.0	40.4	204.0	40.6	205.0	40.8	206.0	41.0	207.0		
	195.0	48.8	195.9	49.1	196.9	49.3	197.9	49.6	198.9	49.8	199.8	50.1	200.8	50.3	201.8	50.5	202.8	50.8	203.8	51.0	204.0		
2	192.3	58.4	193.3	58.6	194.3	58.9	195.2	59.2	196.2	59.5	197.1	59.8	198.1	60.1	199.0	60.4	200.0	60.8	201.0	61.2	202.2		
	189.2	67.7	190.2	68.0	191.1	68.4	192.1	68.7	193.0	69.1	194.0	69.4	194.9	69.7	195.8	70.1	196.8	70.5	197.8	71.2	198.2		
	185.7	76.9	186.6	77.3	187.6	77.7	188.5	78.1	189.4	78.5	190.3	78.8	191.3	79.2	192.2	79.6	193.2	80.0	194.2	80.6	195.8		
	181.7	85.9	182.6	86.4	183.5	86.8	184.4	87.2	185.3	87.7	186.2	88.1	187.1	88.5	188.0	88.9	189.8	89.5	190.8	90.2	191.2		
	177.3	94.7	178.2	95.2	179.0	95.7	179.9	96.2	180.8	96.6	181.7	97.1	182.6	97.6	183.4	98.0	184.0	98.5	185.8	99.0	186.2		
3	172.4	103.3	173.3	103.8	174.1	104.4	175.0	104.9	175.8	105.4	176.7	105.9	177.5	106.4	178.1	106.9	179.8	107.5	179.5	108.2	180.0		
	167.1	111.7	168.0	112.2	168.8	112.8	169.6	113.3	170.4	113.9	171.3	114.4	172.1	115.0	172.9	115.6	174.8	116.5	178.5	119.2	181.0		
	161.4	119.7	162.2	120.3	163.0	120.9	163.9	121.5	164.7	122.1	165.5	122.7	166.3	123.3	167.1	123.9	168.8	124.5	176.5	127.2	179.0		
	155.4	127.5	156.1	128.2	156.9	128.8	157.7	129.4	158.5	130.0	159.2	130.7	160.0	131.3	160.8	132.0	162.5	133.2	174.0	134.7	176.2		
	148.9	135.0	149.7	135.6	150.4	136.3	151.1	137.0	151.9	137.7	152.6	138.3	153.4	139.0	154.1	139.7	156.5	140.2	171.0	141.7	173.2		
4	142.1	142.1	142.8	142.8	143.5	143.5	144.2	144.2	145.0	145.0	145.7	145.7	146.4	146.4	147.1	147.1	147.8	147.8	148.5	148.5	149.2		
1	201.0	03.5	202.0	03.5	203.0	03.5	204.0	03.6	205.0	03.6	206.0	03.6	207.0	03.6	208.0	03.6	209.0	03.6	210.0	03.6	211.0		
	200.9	07.0	201.9	07.0	202.9	07.1	203.9	07.1	204.9	07.2	205.9	07.2	206.9	07.2	207.9	07.3	208.9	07.3	209.9	07.3	210.9		
	200.7	10.6	201.7	10.6	202.7	10.6	203.7	10.7	204.7	10.7	205.7	10.8	206.7	10.8	207.7	10.9	208.7	10.9	209.7	10.9	210.7		
	200.5	14.0	201.5	14.1	202.5	14.2	203.5	14.2	204.5	14.3	205.5	14.4	206.5	14.4	207.5	14.5	208.5	14.5	209.5	14.5	210.5		
	200.2	17.5	201.2	17.6	202.2	17.7	203.2	17.8	204.2	17.9	205.2	18.0	206.2	18.0	207.2	18.1	208.2	18.1	209.2	18.1	210.2		
5	199.9	21.0	200.9	21.1	201.9	21.2	202.9	21.3	203.9	21.4	204.9	21.5	205.9	21.6	206.9	21.7	207.9	21.7	208.9	21.7	209.9		
	199.5	24.5	200.5	24.6	201.5	24.7	202.5	24.9	203.5	25.0	204.5	25.1	205.5	25.2	206.4	25.3	207.4	25.3	208.4	25.3	209.4		
	199.0	28.0	200.0	28.1	201.0	28.3	202.0	28.4	203.0	28.5	204.0	28.7	205.0	28.8	206.0	28.9	207.0	28.9	208.0	28.9	209.0		
	198.5	31.4	199.5	31.6	200.5	31.8	201.5	31.9	202.5	32.1	203.5	32.2	204.5	32.4	205.4	32.5	206.4	32.5	207.4	32.5	208.4		
	197.9	34.9	198.9	35.1	199.9	35.3	200.9	35.4	201.9	35.6	202.9	35.8	203.9	35.9	204.8	36.1	205.8	36.1	206.8	36.1	207.8		
11	197.3	38.4	198.3	38.5	199.3	38.7	200.3	38.9	201.2	39.1	202.2	39.3	203.2	39.5	204.2	39.7	205.2	39.7	206.2	39.7	207.2		
	196.6	41.8	197.6	42.0	198.6	42.2	199.5	42.4	200.5	42.6	201.5	42.8	202.5	43.0	203.5	43.2	204.5	43.2	205.5	43.2	206.5		
	195.8	45.2	196.8	45.4	197.8	45.7	198.8	45.9	199.7	46.1	200.7	46.3	201.7	46.6	202.7	46.8	203.7	46.8	204.7	46.8	205.7		
	195.0	48.6	196.0	48.9	197.0	49.1	197.9	49.4	198.9	49.6	199.9	49.8	200.9	50.1	201.8	50.3	202.8	50.3	203.8	50.3	204.8		
	194.2	52.0	195.1	52.3	196.1	52.5	197.0	52.8	198.0	53.1	199.0	53.3	199.9	53.6	200.9	53.8	201.9	53.8	202.9	53.8	203.9		
16	193.2	55.4	194.2	55.7	195.1	56.0	196.1	56.2	197.1	56.5	198.0	56.8	199.0	67.1	199.9	57.3	200.9	57.3	201.9	57.3	202.9		
	192.2	58.8	193.2	59.1	194.1	59.4	195.1	59.6	196.0	59.9	197.0	60.2	198.0	60.5	198.9	60.8	199.9	60.8	200.9	60.8	201.9		
	191.2	62.1	192.1	62.4	193.1	62.7	194.0	63.0	195.0	63.3	195.9	63.7	196.9	64.0	197.8	64.3	198.8	64.3	199.8	64.3	200.8		
	190.0	65.4	191.0	65.8	191.9	66.1	192.9	66.4	193.8	66.7	194.8	67.1	195.7	67.4	196.7	67.7	197.7	67.7	198.7	67.7	199.7		
	188.9	68.7	189.8	69.1	190.8	69.4	191.7	69.8	192.6	70.1	193.6	70.5	194.5	70.8	195.5	71.1	196.5	71.1	197.5	71.1	198.5		
21	187.6	72.0	188.6	72.4	189.5	72.7	190.5	73.1	191.4	73.5	192.3	73.8	193.3	74.2	194.2	74.5	195.2	74.5	196.2	74.5	197.2		
	186.4	75.3	187.3	75.7	188.2	76.0	189.1	76.4	190.1	76.8	191.0	77.2	191.9	77.5	192.9	77.9	193.6	77.9	194.6	77.9	195.6		
	185.0	78.5	185.9	78.9	186.9	79.3	187.8	79.7	188.7	80.1	189.6	80.5	190.5	80.9	191.5	81.3	192.5	81.3	193.5	81.3	194.5		
	183.6	81.8	184.5	82.2	185.4	82.6	186.4	83.0	187.3	83.4	188.2	83.8	189.1	84.2	190.0	84.6	191.0	84.6	192.0	84.6	193.0		
	182.2	84.9	183.1	85.4	184.0	85.6	184.9	86.2	185.8	86.6	186.7	87.1	187.6	87.5	188.5	87.9	189.5	87.9	190.5	87.9	191.5		
26	180.7	88.1	181.6	88.6	182.5	89.0	183.4	89.4	184.3	89.9	185.2	90.3	186.1	90.7	186.9	91.2	187.5	91.2	188.5	91.2	189.5		
	179.1	91.3	180.0	91.7	181.8	92.2	181.8	92.6	182.7	93.1	183.5	93.5	184.4	94.0	185.3	94.4	186.3	94.4	187.3	94.4	188.3		
	177.5	94.4	178.4	94.8	179.2	95.3	180.1	95.8	181.0	96.2	181.9	96.7	182.8	97.2	183.7	97.7	184.7	97.7	185.7	97.7	186.7		
	175.8	97.4	176.7	97.9	177.5	98.4	178.4	98.9	179.3	99.4	180.2	99.9	181.0	100.4	181.9	100.8	183.5	100.8	184.5	100.8	185.5		
	174.1	100.5	174.9	101.0	175.8	101.5	176.7	102.0	177.5	102.5	178.4	103.0	179.3	103.5	180.1	104.0	181.5	104.0	182.5	104.0	183.5		
31	172.3	103.5	173.1	104.0	174.0	104.6	174.9	105.1	175.7	105.6	176.6	106.1	177.4	106.6	178.3	107.1	180.5	107.1	181.5	107.1	182.5		
	170.5	106.5	171.3	107.0	172.2	107.6	173.0	108.1	173.8	108.6	174.7	109.2	175.5	109.7	176.4	110.2	182.5	109.7	178.5	109.7	180.5		
	168.6	109.5	169.4	110.0	170.3	110.6	171.1	111.1	171.9	111.7	172.8	112.2	173.6	112.7	174.4	113.3	184.5	113.3	175.5	113.3	176.5		
	166.6	112.4	167.5	113.0	168.3	113.5	169.1	114.1	170.0	114.6	170.8	115.2	171.6	115.8	172.4	116.3	186.5	116.3	177.5	116.3	178.5		
	164.6	115.3	165.5	115.9	166.3	116.4	167.1	117.0	167.9	117.5	168.7	118.2	169.6	118.7	170.4	119.3	188.5	119.3	180.5	119.3	181.5		
36	162.6	118.1	163.4	118.7	164.2	119.3	165.0	119.9	165.8	120.5	166.7	121.1	167.5	121.7	168.3	122.3	190.5	122.3	181.5	122.3	183.5		
	160.5	121.0	161.3	121.6	162.1	122.2	162.9	122.8	163.7	123.4	164.5	124.0	165.3	124.6	166.1	125.2	192.5	125.2	183.5	125.2	185.5		
	158.4	123.7	159.2	124.4	160.0	125.0	160.8	125.6	161.5	126.2	162.3	126.8	163.1	127.4	163.9	128.1	194.5	128.1	185.5	128.1	187.5		
	156.2	126.5	157.0	127.1	157.8	127.8	158.5	128.4	159.3	129.0	160.1	129.6	160.9	130.3	161.6	130.9	196.5	130.9	187.5	130.9	189.5		
	154.0	129.2	154.7	129.8	155.5	130.5	156.3	131.1	157.0	131.8	157.8	132.4	158.6	133.1	159.3	133.7	198.5	133.7	189.5	133.7	191.5		
41	151.7	131.9	152.5	132.5	153.2	133.2	154.0	133.8	154.7	134.5	155.5	135.1	156.2	135.5	157.0	136.5	200.5	136.5	191.5	136.5	193.5		
	149.4	134.5	150.1	135.2	150.9	135.8	151.6	136.5	152.3	137.2	153.1	137.8	153.8	138.5	154.6	139.2	202.5	139.2	192.5	139.			

Traverse Table.

(x.)

Distance. 209			210			211			212			213			214			215			216		
Crs.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Crs.		
1	208.8	10.3	209.8	10.3	210.7	10.4	211.7	10.4	212.7	10.5	213.7	10.5	214.7	10.6	215.7	10.6	216.7	10.7	217.7	10.8	7		
1	208.0	20.5	209.0	20.6	210.0	20.7	211.0	20.8	212.0	20.9	213.0	21.0	214.0	21.1	215.0	21.2	216.0	21.3	217.0	21.4	1		
1	206.7	30.7	207.7	30.8	208.7	30.9	209.7	31.1	210.7	31.2	211.7	31.4	212.7	31.5	213.7	31.7	214.7	31.9	215.7	32.1	1		
1	205.0	40.8	206.0	41.0	206.9	41.2	207.9	41.4	208.9	41.6	209.9	41.7	210.9	41.9	211.8	42.1	212.8	42.3	213.8	42.5	7		
1	202.7	50.8	203.7	51.0	204.7	51.3	205.6	51.5	206.6	51.8	207.6	52.0	208.6	52.2	209.5	52.5	210.5	52.7	211.5	52.9	1		
1	200.0	60.7	201.0	61.0	201.9	61.2	202.9	61.5	203.8	61.8	204.8	62.1	205.7	62.4	206.7	62.7	207.7	63.0	208.7	63.3	1		
1	196.8	70.4	197.7	70.7	198.7	71.1	199.6	71.4	200.5	71.8	201.5	72.1	202.4	72.4	203.4	72.8	204.4	73.2	205.4	73.6	1		
2	193.1	80.0	194.0	80.4	194.9	80.8	195.9	81.1	196.8	81.5	197.7	81.9	198.6	82.3	199.6	82.7	200.6	83.1	201.6	83.5	6		
1	188.9	89.4	189.8	89.8	190.7	90.2	191.6	90.6	192.6	91.1	193.5	91.5	194.4	91.9	195.3	92.4	196.3	92.8	197.3	93.3	1		
1	184.3	98.5	185.2	99.0	186.1	99.5	187.0	99.9	187.8	100.4	188.7	100.9	189.6	101.3	190.5	101.8	191.7	102.1	192.7	103.1	1		
1	179.2	107.4	180.1	108.0	181.0	108.5	181.8	109.0	182.7	109.5	183.5	110.0	184.4	110.5	185.3	111.0	186.2	111.7	187.7	112.2	1		
3	173.8	116.1	174.6	116.7	175.4	117.2	176.3	117.8	177.1	118.3	177.9	118.9	178.8	119.4	179.6	120.0	180.5	121.1	181.7	122.3	5		
1	167.9	124.5	168.7	125.1	169.5	125.7	170.3	126.3	171.1	126.9	171.9	127.5	172.7	128.1	173.5	128.7	174.9	129.5	175.9	130.5	1		
1	161.6	132.6	162.3	133.2	163.1	133.9	163.9	134.5	164.6	135.1	165.4	135.8	166.2	136.4	167.0	137.0	168.2	137.9	169.7	138.7	1		
1	154.9	140.3	155.6	141.0	156.3	141.7	157.1	142.4	157.8	143.0	158.6	143.7	159.3	144.4	160.0	145.0	161.2	145.9	162.9	146.7	1		
4	147.8	147.8	148.5	148.5	149.2	149.2	149.9	149.9	150.6	150.6	151.3	151.3	152.0	152.0	152.7	152.7	153.4	153.4	154.1	154.1	4		
1	209.0	03.6	210.0	03.7	211.0	03.7	212.0	03.7	213.0	03.7	214.0	03.7	215.0	03.8	216.0	03.8	217.0	03.9	218.0	04.0	89		
2	208.9	07.3	209.9	07.3	210.9	07.4	211.9	07.4	212.9	07.4	213.9	07.5	214.9	07.5	215.9	07.5	216.9	07.6	217.9	07.7	88		
3	208.7	10.9	209.7	11.0	210.7	11.0	211.7	11.1	212.7	11.1	213.7	11.2	214.7	11.3	215.7	11.3	216.7	11.4	217.7	11.5	87		
4	208.5	14.6	209.5	14.6	210.5	14.7	211.5	14.8	212.5	14.9	213.5	14.9	214.5	15.0	215.5	15.1	216.5	15.2	217.5	15.3	86		
5	208.2	18.2	209.2	18.3	210.2	18.4	211.2	18.5	212.2	18.6	213.2	18.7	214.2	18.7	215.2	18.8	216.2	18.9	217.2	19.0	85		
6	207.9	21.8	208.8	22.0	209.8	22.1	210.8	22.2	211.8	22.3	212.8	22.4	213.8	22.5	214.8	22.6	215.8	22.7	216.8	22.8	84		
7	207.4	25.5	208.4	25.6	209.4	25.7	210.4	25.8	211.4	26.0	212.4	26.1	213.4	26.2	214.4	26.3	215.4	26.4	216.4	26.5	83		
8	207.0	29.1	208.0	29.2	208.9	29.4	209.9	29.5	210.9	29.6	211.9	29.8	212.9	29.9	213.9	30.1	214.9	30.2	215.9	30.3	82		
9	206.4	32.7	207.4	32.9	208.4	33.0	209.4	33.2	210.4	33.3	211.4	33.5	212.4	33.6	213.3	33.8	214.3	33.9	215.3	34.0	81		
10	205.8	36.3	206.8	36.5	207.8	36.6	208.8	36.8	209.8	37.0	210.7	37.2	211.7	37.3	212.7	37.5	213.7	37.6	214.7	37.7	80		
11	205.2	39.9	206.1	40.1	207.1	40.3	208.1	40.5	209.1	40.6	210.1	40.8	211.0	41.0	212.0	41.2	213.0	41.3	214.0	41.4	79		
12	204.4	43.5	205.4	43.7	206.4	43.9	207.4	44.1	208.3	44.3	209.3	44.5	210.3	44.7	211.3	44.9	212.3	45.1	213.3	45.3	78		
13	203.6	47.0	204.6	47.2	205.6	47.5	206.6	47.7	207.5	47.9	208.5	48.1	209.5	48.4	210.5	48.6	211.5	48.8	212.5	49.0	77		
14	202.8	50.6	203.8	50.8	204.7	51.0	205.7	51.3	206.7	51.5	207.6	51.8	208.6	52.0	209.6	52.3	210.6	52.5	211.6	52.8	76		
15	201.9	54.1	202.8	54.4	203.8	54.6	204.8	54.9	205.7	55.1	206.7	55.4	207.7	55.6	208.6	55.9	209.6	56.2	210.6	56.5	75		
16	200.9	57.6	201.9	57.9	202.8	58.2	203.8	58.4	204.7	58.7	205.7	59.0	206.7	59.3	207.6	59.5	208.6	59.9	209.6	60.2	74		
17	199.9	61.1	200.8	61.4	201.8	61.7	202.7	62.0	203.7	62.3	204.6	62.6	205.6	62.9	206.6	63.2	207.6	63.5	208.6	63.9	73		
18	198.8	64.6	199.7	64.9	200.7	65.2	201.6	65.5	202.6	65.8	203.5	66.1	204.5	66.4	205.4	66.7	206.4	67.0	207.4	67.3	72		
19	197.6	68.0	198.6	68.4	199.5	68.7	200.4	69.0	201.4	69.3	202.3	69.7	203.3	70.0	204.2	70.3	205.2	70.6	206.2	70.9	71		
20	196.4	71.5	197.3	71.8	198.3	72.2	199.2	72.5	200.2	72.9	201.1	73.2	202.0	73.5	203.0	73.9	204.0	74.2	205.0	74.5	70		
21	195.1	74.9	196.1	75.3	197.0	75.6	197.9	76.0	198.9	76.3	199.8	76.7	200.7	77.0	201.7	77.4	202.6	77.9	203.6	78.3	69		
22	193.8	78.3	194.7	78.7	195.6	79.0	196.6	79.4	197.5	79.8	198.4	80.2	199.3	80.5	200.3	80.9	201.2	81.3	202.2	81.7	68		
23	192.4	81.7	193.3	82.1	194.2	82.4	195.1	82.8	196.1	83.2	197.0	83.6	197.9	84.0	198.8	84.4	199.7	84.9	200.7	85.3	67		
24	190.9	85.0	191.8	85.4	192.8	85.8	193.7	86.2	194.6	86.6	195.5	87.0	196.4	87.4	197.3	87.9	198.3	88.3	199.2	88.7	66		
25	189.4	88.3	190.3	88.7	191.2	89.2	192.1	89.6	193.0	90.0	193.9	90.4	194.9	90.9	195.8	91.3	196.7	91.7	197.6	92.1	65		
26	187.8	91.6	188.7	92.1	189.6	92.5	190.5	92.9	191.4	93.4	192.3	93.8	193.2										

Traverse Table.

Distance.		217	218	219	220	221	222	223
Course	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.
1	216.7	10.7	217.7	10.7	218.7	10.8	219.7	10.8
2	216.0	21.3	216.9	21.4	217.9	21.5	218.9	21.6
3	214.6	31.8	215.6	32.0	216.6	32.1	217.6	32.3
4	212.8	42.3	213.8	42.5	214.8	42.7	215.8	42.9
5	210.5	52.7	211.5	53.0	212.4	53.2	213.4	53.5
6	207.7	63.0	208.6	63.3	209.6	63.6	210.5	63.9
7	204.3	73.1	205.3	73.4	206.2	73.8	207.1	74.1
8	200.5	83.0	201.4	83.4	202.3	83.8	203.3	84.2
9	196.2	92.8	197.1	93.2	198.0	93.6	198.9	94.1
10	191.4	102.3	192.3	102.9	193.1	103.4	194.0	103.7
11	186.1	111.6	187.0	112.1	187.8	112.6	188.7	113.1
12	180.4	120.6	181.3	121.1	182.1	121.7	182.9	122.2
13	174.3	129.3	175.1	129.9	175.9	130.5	176.7	131.1
14	167.7	137.7	168.5	138.3	169.3	138.9	170.1	139.6
15	160.8	145.7	161.5	146.3	162.3	147.1	163.0	147.7
16	153.4	153.4	154.1	154.1	154.9	154.9	155.6	155.6
17	146.5	161.1	146.8	161.8	147.6	162.6	148.3	163.3
18	139.2	168.5	139.5	169.2	140.3	170.0	141.0	170.7
19	131.5	175.6	131.8	176.3	132.6	177.0	133.3	177.7
20	123.4	182.4	123.7	183.1	124.8	183.8	125.5	184.5
21	114.9	188.9	115.2	189.6	116.3	190.3	117.0	191.0
22	106.0	195.1	106.3	195.8	107.4	196.5	108.1	197.2
23	96.7	201.0	97.0	201.7	98.1	202.4	98.8	203.1
24	87.0	206.6	87.3	207.3	88.4	208.0	89.1	208.7
25	76.9	211.9	77.2	212.6	78.3	213.3	79.0	214.0
26	66.4	217.0	66.7	217.7	67.8	218.4	68.5	219.1
27	55.5	221.9	55.8	222.6	56.9	223.3	57.6	224.0
28	44.2	226.6	44.5	227.3	45.6	228.0	46.3	228.7
29	32.5	231.1	32.8	231.8	33.9	232.5	34.6	233.2
30	20.4	235.4	20.7	236.1	21.8	236.8	22.5	237.5
31	8.0	239.5	8.3	240.2	9.4	240.9	10.1	241.6
32	-3.1	242.4	-2.8	243.1	-1.7	243.8	-1.0	244.5
33	-13.2	245.1	-12.9	245.8	-11.8	246.5	-11.1	247.2
34	-22.3	247.6	-22.0	248.3	-20.9	249.0	-19.2	249.7
35	-30.4	250.0	-30.1	250.7	-29.0	251.4	-27.3	252.1
36	-37.5	252.3	-37.2	253.0	-36.1	253.7	-34.4	254.4
37	-43.6	254.5	-43.3	255.2	-42.2	255.9	-40.5	256.6
38	-48.7	256.6	-48.4	257.3	-47.3	258.0	-45.6	258.7
39	-52.8	258.7	-52.5	259.4	-51.4	260.1	-49.7	260.8
40	-55.9	260.8	-55.6	261.5	-54.5	262.2	-52.8	262.9
41	-58.0	262.9	-57.7	263.6	-56.4	264.3	-54.7	265.0
42	-59.1	265.0	-58.8	265.7	-57.5	266.4	-55.8	267.1
43	-59.2	267.1	-58.9	267.8	-57.6	268.5	-55.9	269.2
44	-58.3	269.2	-58.0	269.9	-56.7	270.6	-54.8	271.3
45	-56.4	271.3	-56.1	272.0	-55.0	272.7	-53.1	273.4
46	-53.5	273.4	-53.2	274.1	-52.0	274.8	-50.1	275.5
47	-49.6	275.5	-49.3	276.2	-48.1	276.9	-46.2	277.6
48	-44.7	277.6	-44.4	278.3	-43.3	279.0	-41.4	279.7
49	-38.8	279.7	-38.5	280.4	-37.4	281.1	-35.5	281.8
50	-31.9	281.8	-31.6	282.5	-30.5	283.2	-28.6	283.9
51	-24.0	283.9	-23.7	284.6	-22.6	285.3	-20.7	286.0
52	-15.1	286.0	-14.8	286.7	-13.7	287.4	-11.8	288.1
53	-4.2	288.1	-3.9	288.8	-2.8	289.5	-1.0	290.2
54	6.7	290.2	6.4	290.9	5.3	291.6	3.4	292.3
55	17.8	292.3	17.5	293.0	16.4	293.7	14.5	294.4
56	27.9	294.4	27.6	295.1	26.5	295.8	24.6	296.5
57	37.0	296.5	36.7	297.2	35.6	297.9	33.7	298.6
58	45.1	298.6	44.8	299.3	43.7	300.0	41.8	300.7
59	52.2	300.7	51.9	301.4	50.8	302.1	48.9	302.8
60	58.3	302.8	58.0	303.5	56.9	304.2	55.0	304.9
61	63.4	304.9	63.1	305.6	61.6	306.3	59.7	307.0
62	67.5	307.0	67.2	307.7	65.7	308.4	63.8	309.1
63	70.6	309.1	70.3	309.8	68.8	310.5	66.9	311.2
64	72.7	311.2	72.4	311.9	70.9	312.6	69.0	313.3
65	73.8	313.3	73.5	314.0	71.9	314.9	70.0	315.6
66	73.9	315.6	73.6	316.3	71.9	317.6	70.0	318.9
67	73.0	318.9	72.7	319.6	71.0	320.9	69.1	322.2
68	71.1	322.2	70.8	322.9	69.0	324.0	67.1	325.7
69	68.2	325.7	67.9	326.4	66.1	327.7	64.2	329.0
70	64.3	329.0	64.0	329.7	62.2	331.0	60.3	332.7
71	59.4	332.7	59.1	333.4	57.3	335.0	55.4	336.7
72	53.5	336.7	53.2	337.4	51.2	339.9	49.3	341.0
73	46.6	341.0	46.3	341.7	44.2	344.2	42.3	346.3
74	38.7	346.3	38.4	347.0	36.5	349.5	34.6	351.6
75	29.8	351.6	29.5	352.3	27.6	355.8	25.7	358.9
76	19.9	358.9	19.6	359.6	17.7	363.1	15.8	366.2
77	9.0	366.2	8.7	366.9	15.6	367.4	13.7	369.5
78	-2.9	369.5	-2.6	370.2	13.5	370.9	11.6	372.6
79	-12.0	372.6	-11.7	373.3	11.4	372.6	9.5	374.7
80	-20.1	374.7	-19.8	375.4	9.3	374.5	7.4	376.8
81	-27.2	376.8	-26.9	377.5	7.2	376.4	5.5	378.9
82	-33.3	378.9	-33.0	379.6	5.1	378.3	3.6	381.0
83	-38.4	381.0	-38.1	381.7	3.0	380.2	1.7	383.1
84	-42.5	383.1	-42.2	383.8	0.9	381.1	-0.4	385.2
85	-45.6	385.2	-45.3	385.9	-1.2	382.0	-2.7	387.3
86	-47.7	387.3	-47.4	388.0	-3.4	382.9	-4.9	389.4
87	-48.8	389.4	-48.5	389.1	-5.6	383.8	-7.1	391.5
88	-48.9	391.5	-48.6	390.2	-7.8	384.7	-9.3	393.6
89	-47.0	393.6	-46.7	391.9	-10.0	385.6	-11.5	395.7
90	-44.1	395.7	-43.8	392.6	-12.2	386.5	-13.7	397.8
91	-39.2	397.8	-38.9	393.7	-14.4	387.4	-15.2	399.9
92	-33.3	399.9	-33.0	394.8	-16.6	388.3	-16.7	402.0
93	-26.4	402.0	-26.1	395.9	-18.8	389.2	-18.8	404.1
94	-18.5	404.1	-18.2	397.0	-21.0	390.1	-20.9	406.2
95	-9.6	406.2	-9.3	398.1	-23.2	391.0	-23.1	408.3
96	0.3	408.3	0.0	399.2	-25.4	391.9	-25.3	410.4
97	10.4	410.4	10.1	400.3	-27.6	392.8	-27.5	412.5
98	19.5	412.5	19.2	401.4	-29.8	393.7	-29.7	414.6
99	27.6	414.6	27.3	402.5	-32.0	394.6	-31.9	416.7
100	34.7	416.7	34.4	403.6	-34.2	395.5	-34.1	418.8
101	40.8	418.8	40.5	404.7	-36.4	396.4	-36.3	420.9
102	45.9	420.9	45.6	405.8	-38.6	397.3	-38.5	423.0
103	49.0	423.0	48.7	406.9	-40.8	398.2	-40.7	425.1
104	50.1	425.1	49.8	408.0	-43.0	399.1	-42.9	427.2
105	49.2	427.2	48.9	409.1	-45.2	400.0	-45.1	429.3
106	47.3	429.3	47.0	410.2	-47.4	400.9	-47.3	431.4
107	44.4	431.4	44.1	411.3	-49.6	401.8	-49.5	433.5
108	40.5	433.5	40.2	412.4	-51.8	402.7	-51.7	435.6
109	35.6	435.6	35.3	413.5	-54.0	403.6	-53.9	437.7
110	29.7	437.7	29.4	414.6	-56.2	404.5	-56.1	439.8
111	22.8	439.8	22.5	415.7	-58.4	405.4	-58.3	441.9
112	14.9	441.9	14.6	416.8	-60.6	406.3	-60.5	444.0
113	6.0	444.0	5.7	417.9	-62.8	407.2	-62.7	446.1
114	-3.9	446.1	-3.6	419.0	-65.0	408.1	-64.9	448.2
115	-12.0	448.2	-11.7	420.1	-67.2	409.0	-67.1	450.3
116	-19.1	450.3	-18.8	421.2	-69.4	409.9	-69.3	452.4
117	-25.2	452.4	-24.9	422.3	-71.6	410.8	-71.5	454.5
118	-30.3	454.5	-30.0	423.4	-73.8	411.7	-73.7	456.6
119	-34.4	456.6	-34.1	424.5	-76.0	412.6	-75.9	458.7
120	-37.5	458.7	-37.2	425.6	-78.2	413.5	-78.1	460.8
121	-39.6	460.8	-39.3	426.7	-80.4	414.4	-80.3	462.9
122	-40.7	462.9	-40.4	427.8	-82.6	415.3	-82.5	465.0
123	-40.8	465.0	-40.5	428.9	-84.8	416.2	-84.7	467.1
124	-39.9	467.1	-39.6	429.0	-87.0	417.1	-86.9	469.2
125	-38.0	469.2	-37.7	430.1	-89.2	418.0	-89.1	471.3
126	-35.1	471.3	-34.8	431.2	-91.4	418.9	-91.3	473.4
127	-31.2	473.4	-30.9	432.3	-93.6	419.8	-93.5	475.5
128	-26.3	475.5	-26.0	433.4	-95.8	420.7	-95.7	477.6
129	-20.4	477.6	-20.1	434.5	-98.0	421.6	-97.9	479.7
130	-13.5	479.7	-13.2	435.6	-100.2	422.5	-100.1	481.8
131	-5.6	481.8	-5.3	436.7	-102.4	423.4	-102.3	483.9
132	3.3	483.9	3.0	437.8	-104.6	424.3	-104.5	486.0
133	11.4	486.0	11.1	438.9	-106.8	425.2	-106.7	488.1
134	18.5	488.1	18.2	440.0	-109.0	426.1	-108.9	490.2
135	24.6	490.2	24.3	441.1	-111.2	427.0	-111.1	492.3
136	29.7	492.3	29.4	442.2	-113.4	427.9	-113.	

Traverse Table.

(N.)

	225		226		227		228		229		230		231		232		
Sta.	Dist. Loc.	Dep.	Dist. Loc.	Dep.	Dist. Loc.	Dep.	Dist. Loc.	Dep.	Dist. Loc.	Dep.	Dist. Loc.	Dep.	Dist. Loc.	Dep.	Dist. Loc.	Dep.	Sta.
1	224.7	11.0	225.7	11.1	226.7	11.1	227.7	11.2	228.7	11.2	229.7	11.3	230.7	11.3	231.7	11.4	74
2	223.9	22.1	224.9	22.2	225.9	22.2	226.9	22.3	227.9	22.4	228.9	22.5	229.9	22.5	230.9	22.7	75
3	222.6	33.0	223.5	33.2	224.5	33.3	225.5	33.4	226.5	33.6	227.5	33.7	228.5	33.9	229.5	34.0	76
4	220.7	43.9	221.7	44.1	222.6	44.3	223.6	44.5	224.6	44.7	225.6	44.9	226.6	45.1	227.5	45.3	77
5	218.3	54.7	219.2	54.9	220.2	55.2	221.2	55.4	222.1	55.6	223.1	55.9	224.1	56.1	225.1	56.4	78
6	215.3	65.3	216.3	65.6	217.3	65.9	218.2	66.2	219.1	66.5	220.1	66.8	221.1	67.0	222.0	67.3	79
7	211.9	75.8	212.8	76.1	213.7	76.3	214.7	76.5	215.6	77.1	216.5	77.5	217.5	77.8	218.4	78.2	80
8	207.9	86.1	208.8	86.5	209.7	86.9	210.6	87.3	211.6	87.6	212.5	88.0	213.4	88.4	214.3	88.6	81
9	203.4	96.2	204.3	96.5	205.2	97.1	206.1	97.5	207.0	97.9	207.9	98.3	208.8	98.8	209.7	99.2	82
10	198.4	106.1	199.3	106.5	200.2	107.0	201.1	107.5	202.0	107.9	202.8	108.4	203.7	108.9	204.6	109.4	83
11	193.0	115.7	194.0	116.2	194.7	116.7	195.6	117.2	196.4	117.7	197.3	118.2	198.1	118.8	199.0	119.3	84
12	187.1	125.0	187.9	125.6	188.7	126.1	189.6	126.7	190.4	127.2	191.2	127.8	192.1	128.3	192.9	128.9	85
13	180.7	134.0	181.5	134.6	182.3	135.2	183.1	135.8	183.9	136.4	184.7	137.0	185.5	137.6	186.3	138.2	86
14	173.9	142.7	174.7	143.4	175.5	144.0	176.2	144.6	177.0	145.3	177.8	145.9	178.6	146.5	179.3	147.2	87
15	166.7	151.1	167.4	151.8	168.2	152.4	168.9	153.1	169.7	153.8	170.4	154.5	171.2	155.1	171.9	155.8	88
16	159.1	159.1	159.8	159.8	160.5	160.5	161.2	161.2	161.9	161.9	162.6	162.6	163.3	163.3	164.0	164.0	89
17	155.6	03.9	226.0	03.9	227.0	04.0	228.0	04.0	229.0	04.0	230.0	04.0	231.0	04.0	232.0	04.0	90
18	224.9	07.9	225.9	07.9	226.9	07.9	227.9	08.0	228.9	08.0	229.9	08.0	230.9	08.1	231.9	08.1	91
19	224.7	11.8	225.7	11.8	226.7	11.9	227.7	11.9	228.7	12.0	229.7	12.0	230.7	12.1	231.7	12.1	92
20	224.5	15.7	225.4	15.8	226.4	15.8	227.4	15.9	228.4	16.0	229.4	16.0	230.4	16.1	231.4	16.1	93
21	224.1	19.6	225.1	19.7	226.1	19.8	227.1	19.9	228.1	20.0	229.1	20.0	230.1	20.1	231.1	20.2	94
22	223.8	23.5	224.8	23.6	225.8	23.7	226.8	23.8	227.8	23.9	228.7	24.0	229.7	24.1	230.7	24.3	95
23	223.3	27.4	224.3	27.5	225.3	27.7	226.3	27.8	227.3	27.9	228.3	28.0	229.3	28.1	230.3	28.3	96
24	222.8	31.3	223.8	31.5	224.8	31.6	225.8	31.7	226.8	31.9	227.8	32.0	228.8	32.1	229.7	32.3	97
25	222.2	35.2	223.2	35.4	224.2	35.5	225.2	35.7	226.2	35.8	227.2	36.0	228.2	36.1	229.1	36.3	98
26	221.6	39.1	222.6	39.2	223.6	39.4	224.6	39.6	225.5	39.8	226.5	39.9	227.5	40.1	228.5	40.3	99
27	220.9	42.9	221.8	43.1	222.8	43.3	223.8	43.5	224.8	43.7	225.8	43.9	226.8	44.1	227.7	44.3	100
28	220.1	46.8	221.1	47.0	222.0	47.2	223.0	47.4	224.0	47.6	225.0	47.8	226.0	48.0	227.9	48.2	79
29	219.1	50.6	220.1	50.8	221.1	51.0	222.1	51.3	223.1	51.5	224.1	51.7	225.1	52.0	226.1	52.2	77
30	218.3	54.4	219.3	54.7	220.3	54.9	221.2	55.2	222.2	55.4	223.2	55.6	224.1	55.9	225.1	56.1	76
31	217.3	58.2	218.3	58.5	219.3	58.8	220.2	59.0	221.2	59.3	222.2	59.5	223.1	59.8	224.1	60.0	75
32	216.1	62.0	217.2	62.3	218.2	62.6	219.2	62.8	220.1	63.1	221.1	63.4	222.1	63.7	223.0	63.9	74
33	215.2	65.8	216.1	66.1	217.1	66.4	218.0	66.7	219.0	67.0	220.0	67.2	220.9	67.5	221.9	67.8	73
34	214.0	69.5	214.9	69.8	215.9	70.1	216.8	70.5	217.8	70.8	218.7	71.1	219.7	71.4	220.6	71.7	72
35	212.7	73.3	213.7	73.6	214.6	73.9	215.6	74.2	216.5	74.5	217.5	74.8	218.4	75.2	219.4	75.5	71
36	211.4	77.0	212.4	77.3	213.3	77.6	214.2	77.9	215.2	78.2	216.1	78.5	217.1	79.0	218.0	79.3	70
37	210.1	80.8	211.0	81.0	212.0	81.3	212.9	81.7	213.8	82.1	214.7	82.4	215.7	82.8	216.6	83.1	69
38	208.6	84.3	209.5	84.7	210.5	85.0	211.4	85.4	212.3	85.8	213.3	86.2	214.2	86.5	215.1	86.9	68
39	207.1	87.9	208.0	88.3	209.0	88.7	210.9	89.1	211.8	89.5	212.7	89.9	213.6	90.3	214.6	90.6	67
40	205.5	91.5	206.5	91.9	207.4	92.3	208.3	92.7	209.2	93.1	210.1	93.5	211.0	94.0	211.9	94.4	66
41	203.9	95.1	204.8	95.5	205.7	95.9	206.6	96.4	207.5	96.8	208.5	97.2	209.4	97.6	210.3	98.0	65
42	202.2	98.6	203.1	99.1	204.0	99.5	204.9	99.9	205.8	100.4	206.7	100.8	207.6	101.3	208.5	101.7	64
43	200.5	102.1	201.4	102.6	202.3	103.1	203.1	103.5	204.0	104.0	204.9	104.3	205.8	104.9	206.7	105.3	63
44	198.7	105.6	199.5	106.1	200.4	106.6	201.3	107.0	202.2	107.5	203.1	108.0	204.0	108.4	204.8	108.9	62
45	196.8	109.1	197.7	109.6	198.5	110.1	199.4	110.5	200.3	111.0	201.2	111.5	202.0	112.0	202.9	112.5	61
46	194.9	112.5	195.7	113.0	196.6	113.5	197.5	114.0	198.3	114.5	199.2	115.0	200.1	115.5	200.9	116.0	60
47	192.9	115.9	193.7	116.4	194.6	116.9	195.4	117.4	196.3	117.9	197.1	118.5	198.0	119.0	198.9	119.5	59
48	190.8	119.2	191.7	119.8	192.5	120.3	193.4	120.8	194.2	121.4	195.1	121.9	122.4	122.4	196.7	122.9	58
49	188.7	122.5	189.5	123.1	190.4	123.6	191.2	124.2	192.1	124.7	192.9	125.3	193.7	125.8	194.6	126.4	57
50	186.5	125.8	187.4	126.4	188.2	126.9	189.0	127.5	189.8	128.1	190.7	128.6	191.5	129.2	192.3	129.7	56
51	184.3	129.1	185.1	129.6	185.9	130.2	186.8	130.8	187.6	131.3	188.4	131.9	189.2	132.5	190.0	133.1	55
52	182.0	132.3	182.8	132.8	183.6	133.4	184.5	134.0	185.3	134.6	186.1	135.2	186.9	135.8	187.7	136.4	54
53	179.7	135.4	180.5	136.0	181.3	136.6	182.1	137.2	182.9	137.8	183.7	138.4	184.5	139.0	185.3	139.6	53
54	177.3	138.5	178.1	139.1	178.9	139.8	179.7	140.4	180.5	141.0	181.2	141.6	182.0	142.2	182.8	142.9	52
55	174.9	141.6	175.6	142.2	176.4	142.9	177.2	143.3	178.0	144.1	178.7	144.7	179.5	145.4	180.7	146.0	51
56	172.4	144.6	173.1	145.3	173.9	145.9	174.7	146.6	175.4	147.2	176.2	147.8	177.0	148.5	177.7	149.1	50
57	169.8	147.6	170.6	148.3	171.3	148.9	172.1	149.6	172.8	150.2	173.6	150.9	174.3	151.5	175.1	152.3	49
58	167.2	150.6	168.0	151.2	168.7	151.9	169.4	152.6	170.2	153.2	170.9	153.9	171.7	154.6	172.4	155.2	48
59	164.8	153.4	165.3	154.1	166.0	154.8	166.7	155.5	167.5	156.2	168.2	156.9	168.9	157.5	169.7	158.2	47
60	161.9	156.3	162.6	157.0	163.3	157.7	164.0	158.4	164.7	159.1	165.4	159.8	166.2	160.5	166.9	161.2	46
61	159.1	159.1	159.8	159.8	160.5	160.5	161.2	161.2	161.9	161.9	162.6	162.6	163.3	163.3	164.0	164.0	45
62	155.6	03.9	226.0	03.9	227.0	04.0	228.0	04.0	229.0	04.0	230.0	04.0	231.0	04.0	232.0	04.0	90
63	224.9	07.9	225.9	07.9	226.9	07.9	227.9	08.0	228.9	08.0	229.9	08.0	230.9	08.1	231.9	08.1	91
64	224.7	11.8	225.7	11.8	226.7	11.9	227.7	11.9	228.7	12.0	229.7	12.0	230.7	12.1	231.7	12.1	92
65	224.5	15.7	225.4	15.8	226.4	15.8	227.4	15.9	228.4	16.0	229.4	16.0	230.4	16.1	231.4	16.1	93
66	224.1	19.6	225.1	19.7	226.1	19.8	227.1	19.9	228.1	20.0	229.1	20.0	230.1	20.1	231.1	20.2	94
67	223.8	23.5	224.8	23.6	225.8	23.7	226.8	23.8	227.8	23.9	228.7	24.0	229.7	24.1	230.7	24.3	95
68	223.3	27.4	224.3	27.5	225.3	27.7	226.3	27.8	227.3	27.9	228.3	28.0	229.3	28.1	230.3	28.3	96
69	222.8	31.3	223.8	31.5	224.8	31.6	225.8	31.7	226.8	31.9	227.8	32.0	228.8	32.1	229.7	32.3	97
70	222.2	35.2	223.2	35.4	224.2	35.5	225.2	35.7	226.2	35.8	227.2	36.0	228.2	36.1	229.1	36.3	98
71	221.6	39.1	222.6	39.2	2												

Traverse Table.

(x.)

Distance.		233	234		235		236		237		238		239		240	
Cross.	Dist. Lat.	Dep.	Dist. Lat.	Dep.	Dist. Lat.	Dep.	Dist. Lat.	Dep.	Dist. Lat.	Dep.	Dist. Lat.	Dep.	Dist. Lat.	Dep.	Dist. Lat.	Dep.
1	232.7	11.4	233.7	11.5	234.7	11.5	235.7	11.6	236.7	11.6	237.7	11.7	238.7	11.7	239.7	11.8
2	231.9	22.8	232.9	22.9	233.9	23.0	234.9	23.1	235.9	23.2	236.9	23.3	237.8	23.4	238.8	23.5
3	230.5	34.2	231.5	34.3	232.4	34.5	233.4	34.6	234.4	34.8	235.4	34.9	236.4	35.1	237.4	35.2
4	228.5	45.5	229.5	45.7	230.5	45.8	231.5	46.0	232.4	46.2	233.4	46.4	234.4	46.6	235.4	46.8
5	226.0	56.6	227.0	56.9	228.0	57.1	228.9	57.3	229.9	57.6	230.9	57.8	231.8	58.1	232.8	58.3
6	223.0	67.6	223.9	67.9	224.9	68.2	225.8	68.5	226.8	68.8	227.8	69.1	228.7	69.4	229.7	69.7
7	219.4	78.5	220.3	78.8	221.3	79.2	222.2	79.5	223.1	79.8	224.1	80.2	225.0	80.5	226.0	80.8
8	215.3	89.2	216.2	89.6	217.1	89.9	218.0	90.3	219.0	90.7	219.9	91.1	220.8	91.5	221.7	91.8
9	210.6	99.6	211.5	100.1	212.4	100.5	213.3	100.9	214.2	101.3	215.1	101.8	216.1	102.2	217.0	102.6
10	205.5	109.8	206.4	110.3	207.3	110.8	208.1	111.2	209.0	111.7	209.9	112.2	210.8	112.7	211.7	113.1
11	199.8	119.8	200.7	120.3	201.6	120.8	202.4	121.3	203.3	121.8	204.1	122.4	205.0	122.9	205.9	123.4
12	193.7	129.4	194.6	130.0	195.4	130.6	196.2	131.1	197.1	131.7	197.9	132.2	198.7	132.8	199.5	133.3
13	187.1	138.8	187.9	139.4	188.8	140.0	189.6	140.6	190.4	141.2	191.2	141.8	192.0	142.4	192.8	143.0
14	180.1	147.8	180.9	148.4	181.7	149.1	182.4	149.7	183.2	150.3	184.0	151.0	184.7	151.6	185.5	152.3
15	172.6	156.5	173.4	157.1	174.1	157.8	174.9	158.5	175.6	159.1	176.3	159.8	177.1	160.5	177.8	161.2
16	164.8	164.8	165.5	165.5	166.2	166.2	166.9	166.9	167.6	167.6	168.3	168.3	169.0	169.0	169.7	169.7
17	233.0	04.1	234.0	04.1	235.0	04.1	236.0	04.1	237.0	04.1	238.0	04.2	239.0	04.2	240.0	04.2
18	232.9	08.1	233.9	08.2	234.9	08.2	235.9	08.2	236.9	08.3	237.9	08.3	238.9	08.3	239.9	08.4
19	232.7	12.2	233.7	12.2	234.7	12.3	235.7	12.4	236.7	12.4	237.7	12.5	238.7	12.5	239.7	12.6
20	232.4	16.3	233.4	16.3	234.4	16.4	235.4	16.5	236.4	16.5	237.4	16.6	238.4	16.7	239.4	16.7
21	232.1	20.3	233.1	20.4	234.1	20.5	235.1	20.6	236.1	20.7	237.1	20.7	238.1	20.8	239.1	20.9
22	231.7	24.4	232.7	24.5	233.7	24.6	234.7	24.7	235.7	24.8	236.7	24.9	237.7	25.0	238.7	25.1
23	231.3	28.4	232.3	28.5	233.2	28.6	234.2	28.8	235.2	28.9	236.2	29.0	237.2	29.1	238.2	29.2
24	230.7	32.4	231.7	32.6	232.7	32.7	233.7	32.8	234.7	33.0	235.7	33.1	236.7	33.3	237.7	33.4
25	230.1	36.4	231.1	36.6	232.1	36.8	233.1	36.9	234.1	37.1	235.1	37.2	236.1	37.4	237.0	37.5
26	229.5	40.5	230.4	40.6	231.4	40.8	232.4	41.0	233.4	41.2	234.4	41.3	235.4	41.5	236.4	41.7
27	228.7	44.5	229.7	44.6	230.7	44.8	231.7	45.0	232.6	45.2	233.6	45.4	234.6	45.6	235.6	45.8
28	227.9	48.4	228.9	48.7	229.9	48.9	230.8	49.1	231.8	49.3	232.8	49.5	233.8	49.7	234.8	49.9
29	227.0	52.4	228.0	52.6	229.0	52.9	230.0	53.1	230.9	53.3	231.9	53.5	232.9	53.8	233.8	54.0
30	226.1	56.4	227.0	56.6	228.0	56.9	229.0	57.1	230.0	57.3	230.9	57.6	231.9	57.8	232.9	58.1
31	225.1	60.3	226.0	60.6	227.0	60.8	228.0	61.1	228.9	61.3	229.9	61.6	230.9	61.9	231.8	62.1
32	224.0	64.2	224.9	64.5	225.9	64.8	226.9	65.1	227.8	65.3	228.8	65.6	229.7	65.9	230.7	66.2
33	222.8	68.1	223.8	68.4	224.7	68.7	225.7	69.0	226.6	69.3	227.6	69.6	228.6	69.9	229.5	70.2
34	221.6	72.0	222.5	72.3	223.5	72.6	224.4	72.9	225.4	73.2	226.4	73.5	227.3	73.9	228.3	74.2
35	220.3	75.9	221.3	76.2	222.2	76.5	223.1	76.8	224.1	77.2	225.0	77.5	226.0	77.8	226.9	78.1
36	218.9	79.7	219.9	80.0	220.8	80.4	221.8	80.7	222.7	81.1	223.6	81.4	224.6	81.7	225.5	82.1
37	217.5	83.5	218.5	83.9	219.4	84.2	220.3	84.6	221.3	84.9	222.2	85.3	223.1	85.6	224.1	86.0
38	216.0	87.3	217.0	87.7	217.9	88.0	218.8	88.4	219.7	88.8	220.7	89.2	221.6	89.5	222.5	89.9
39	214.5	91.0	215.4	91.4	216.3	91.8	217.2	92.2	218.2	92.6	219.1	93.0	220.0	93.4	220.9	93.8
40	212.9	94.8	213.8	95.2	214.7	95.6	215.6	96.0	216.5	96.4	217.4	96.8	218.3	97.2	219.3	97.6
41	211.2	98.5	212.1	98.9	213.0	99.3	213.9	99.7	214.8	100.2	215.7	100.6	216.6	101.0	217.5	101.4
42	209.4	102.1	210.3	102.6	211.2	103.0	212.1	103.5	213.0	103.9	213.9	104.3	214.8	104.8	215.7	105.2
43	207.6	105.8	208.5	106.2	209.4	106.7	210.3	107.1	211.2	107.6	212.1	108.0	213.0	108.5	213.8	109.0
44	205.7	109.4	206.6	109.9	207.5	110.3	208.4	110.8	209.3	111.3	210.1	111.7	211.0	112.2	211.9	112.7
45	203.8	113.0	204.7	113.4	205.5	113.9	206.4	114.4	207.3	114.9	208.2	115.4	209.0	115.9	209.9	116.4
46	201.8	116.5	202.6	117.0	203.5	117.5	204.4	118.0	205.2	118.5	206.1	119.0	207.0	119.5	207.8	120.0
47	199.7	120.0	200.6	120.5	201.4	121.0	202.3	121.5	203.1	122.1	204.0	122.6	204.9	123.1	205.7	123.6
48	197.6	123.5	198.4	124.0	199.3	124.5	200.1	125.1	201.0	125.6	201.8	126.1	202.7	126.7	203.5	127.2
49	195.4	126.9	196.2	127.4	197.1	128.0	197.9	128.5	198.8	129.1	199.6	129.6	200.4	130.2	201.3	130.7
50	193.2	130.3	194.0	130.9	194.8	131.4	195.7	132.0	196.5	132.5	197.3	133.1	198.1	133.6	199.0	134.2
51	190.9	133.6	191.7	134.2	192.5	134.8	193.3	135.4	194.1	135.9	195.0	136.5	195.8	137.1	196.6	137.7
52	188.5	137.0	189.3	137.5	190.1	138.1	190.9	138.7	191.7	139.3	192.5	139.9	193.4	140.5	194.2	141.1
53	186.1	140.2	186.9	140.8	187.7	141.4	188.5	142.0	189.3	142.6	190.1	143.2	190.9	143.8	191.7	144.4
54	183.6	143.4	184.4	144.1	185.2	144.7	186.0	145.3	186.8	145.9	187.5	146.5	188.3	147.1	189.1	147.8
55	181.1	146.6	181.9	147.3	182.6	147.9	183.4	148.5	184.2	149.1	185.0	149.8	185.7	150.4	186.5	151.0
56	178.5	149.8	179.3	150.4	180.0	151.1	180.8	151.7	181.6	152.3	182.3	153.0	183.1	153.6	183.9	154.3
57	175.8	152.9	176.6	153.5	177.4	154.2	178.1	154.8	178.9	155.5	179.6	156.1	180.4	156.8	181.1	157.5
58	173.2	155.9	173.9	156.6	174.6	157.2	175.4	157.9	176.1	158.6	176.9	159.3	177.6	159.9	178.4	160.6
59	170.4	158.9	171.1	159.6	171.9	160.3	172.6	161.0	173.3	161.6	174.1	162.3	174.8	163.0	175.5	163.7
60	167.6	161.9	168.3	162.6	169.0	163.2	169.8	163.9	170.5	164.6	171.2	165.3	171.9	166.0	172.6	166.7
61	164.8	164.8	165.5	165.5	166.2	166.2	166.9	166.9	167.6	167.6	168.3	168.3	169.0	169.0	169.7	169.7
62	233.0	04.1	234.0	04.1	235.0	04.1	236.0	04.1	237.0	04.1	238.0	04.2	239.0	04.2	240.0	04.2
63	232.9	08.1	233.9	08.2	234.9	08.2	235.9	08.2	236.9	08.3	237.9	08.3	238.9	08.3	239.9	08.4
64	232.7	12.2	233.7	12.2	234.7	12.3	235.7	12.4	236.7	12.4	237.7	12.5	238.7	12.5	239.7	12.6
65	232.4	16.3	233.4	16.3	234.4	16.4	235.4	16.5	236.4	16.5	237.4	16.6	238.4	16.7	239.4	16.7
66	232.1	20.3	233.1	20.4	234.1	20.5	235.1	20.6	236.1	20.7	237.1	20.7	238.1	20.8	239.1	20.9
67	231.7	24.4	232.7	24.5	233.7	24.6	234.7	24.7	235.7	24.8	236.7	24.9	237.7	25.0	238.7	25.1
68	231.3	28.4	232.3	28.5	233.2	28.6	234.2	28.8	235.2	28.9	236.2	29.0	237.2	29.1	238.2	29.2
69	230.7	32.4	231.7	32.6	232.7	32.7	233.7	32.8	234.7	33.0	235.7	33.1	236.7	33.3	237.7	33.4
70	230.1	36.4	231.1	36.6	232.1	36.8	233.1	36.9	234.1	37.1	235.1	37.2	236.1	37.4	237.0	37.5
71	229.5	40.5	230.4	40.6	231.4	40.8	232.4	41.0	233.4	41.2	234.4	41.3	235.4	41.5	236.4	41.7
72	228.7	44.5	229.7	44.6	230.7	44.8	231.7	45.0	232.6	45.2	233.6	45.4				

(x.)

Traverse Table.

241		242		243		244		245		246		247		248		
Dist.	Diff. Lat. , Dep.	Diff. Lat. , Dep.	Diff. Lat. , Dep.	Diff. Lat. , Dep.	Diff. Lat. , Dep.	Diff. Lat. , Dep.	Diff. Lat. , Dep.	Diff. Lat. , Dep.	Diff. Lat. , Dep.	Diff. Lat. , Dep.	Diff. Lat. , Dep.	Diff. Lat. , Dep.	Diff. Lat. , Dep.	Diff. Lat. , Dep.	Diff. Lat. , Dep.	Dist.
1	240 7 11.8	241 7 11.9	242 7 11.9	243 7 12.0	244 7 12.0	245 7 12.1	246 7 12.1	247 7 12.2	248 7 12.2	249 7 12.3	250 7 12.3	251 7 12.4	252 7 12.4	253 7 12.5	254 7 12.5	1
2	239 8 23.6	240 8 23.7	241 8 23.8	242 8 23.8	243 8 23.9	244 8 24.0	245 8 24.0	246 8 24.1	247 8 24.2	248 8 24.2	249 8 24.3	250 8 24.3	251 8 24.4	252 8 24.5	253 8 24.5	2
3	238 4 35.4	239 4 35.5	240 4 35.5	241 4 35.7	242 4 35.8	243 4 35.9	244 4 36.0	245 4 36.1	246 4 36.2	247 4 36.3	248 4 36.4	249 4 36.5	250 4 36.6	251 4 36.7	252 4 36.8	3
4	236 4 47.0	237 3 47.2	238 3 47.4	239 3 47.6	240 3 47.8	241 3 48.0	242 3 48.2	243 3 48.4	244 3 48.6	245 3 48.8	246 3 49.0	247 3 49.2	248 3 49.4	249 3 49.6	250 3 49.8	4
5	233 8 58.6	234 7 58.8	235 7 59.0	236 7 59.3	237 7 59.5	238 7 59.8	239 7 60.0	240 7 60.2	241 7 60.4	242 7 60.6	243 7 60.8	244 7 61.0	245 7 61.2	246 7 61.4	247 7 61.6	5
6	230 6 70.0	231 6 70.2	232 5 70.5	233 5 70.8	234 5 71.1	235 5 71.4	236 5 71.7	237 5 72.0	238 5 72.3	239 5 72.6	240 5 72.9	241 5 73.2	242 5 73.5	243 5 73.8	244 5 74.1	6
7	226 9 81.2	227 8 81.5	228 8 81.9	229 7 82.2	230 7 82.5	231 7 82.8	232 7 83.1	233 7 83.4	234 7 83.7	235 7 84.0	236 7 84.3	237 7 84.6	238 7 84.9	239 7 85.2	240 7 85.5	7
8	222 7 92.2	223 6 92.6	224 5 93.0	225 5 93.4	226 5 93.8	227 5 94.2	228 5 94.6	229 5 95.0	230 5 95.4	231 5 95.8	232 5 96.2	233 5 96.6	234 5 97.0	235 5 97.4	236 5 97.8	8
9	217 9 103.0	218 8 103.5	219 7 104.0	220 7 104.3	221 7 104.8	222 7 105.2	223 7 105.6	224 7 106.0	225 7 106.4	226 7 106.8	227 7 107.2	228 7 107.6	229 7 108.0	230 7 108.4	231 7 108.8	9
10	212 5 113.6	213 4 114.1	214 4 114.6	215 4 115.0	216 4 115.5	217 4 116.0	218 4 116.4	219 4 116.8	220 4 117.2	221 4 117.6	222 4 118.0	223 4 118.4	224 4 118.8	225 4 119.2	226 4 119.6	10
11	206 7 123.9	207 6 124.4	208 5 124.9	209 5 125.4	210 5 125.9	211 5 126.4	212 5 126.8	213 5 127.2	214 5 127.6	215 5 128.0	216 5 128.4	217 5 128.8	218 5 129.2	219 5 129.6	220 5 130.0	11
12	200 4 133.9	201 3 134.4	202 3 134.8	203 3 135.2	204 3 135.6	205 3 136.0	206 3 136.4	207 3 136.8	208 3 137.2	209 3 137.6	210 3 138.0	211 3 138.4	212 3 138.8	213 3 139.2	214 3 139.6	12
13	193 6 141.6	194 5 142.1	195 4 142.5	196 4 142.9	197 4 143.3	198 4 143.7	199 4 144.1	200 4 144.5	201 4 144.9	202 4 145.3	203 4 145.7	204 4 146.1	205 4 146.5	206 4 146.9	207 4 147.3	13
14	186 3 152.9	187 2 153.5	188 2 154.0	189 2 154.4	190 2 154.8	191 2 155.2	192 2 155.6	193 2 156.0	194 2 156.4	195 2 156.8	196 2 157.2	197 2 157.6	198 2 158.0	199 2 158.4	200 2 158.8	14
15	178 6 161.8	179 5 162.5	180 4 163.1	181 4 163.8	182 4 164.5	183 4 165.2	184 4 165.9	185 4 166.6	186 4 167.3	187 4 168.0	188 4 168.7	189 4 169.4	190 4 170.1	191 4 170.8	192 4 171.5	15
16	170 4 170.4	171 3 171.1	172 3 171.8	173 3 172.5	174 3 173.2	175 3 173.9	176 3 174.6	177 3 175.3	178 3 176.0	179 3 176.7	180 3 177.4	181 3 178.1	182 3 178.8	183 3 179.5	184 3 180.2	16
17	211 0 04.2	212 0 04.2	213 0 04.2	214 0 04.3	215 0 04.3	216 0 04.3	217 0 04.3	218 0 04.3	219 0 04.3	220 0 04.3	221 0 04.3	222 0 04.3	223 0 04.3	224 0 04.3	225 0 04.3	17
18	210 9 08.4	211 9 08.4	212 9 08.5	213 9 08.5	214 9 08.6	215 9 08.6	216 9 08.6	217 9 08.6	218 9 08.6	219 9 08.6	220 9 08.6	221 9 08.6	222 9 08.6	223 9 08.6	224 9 08.6	18
19	210 7 12.6	211 7 12.7	212 7 12.7	213 7 12.8	214 7 12.8	215 7 12.8	216 7 12.8	217 7 12.8	218 7 12.8	219 7 12.8	220 7 12.8	221 7 12.8	222 7 12.8	223 7 12.8	224 7 12.8	19
20	210 4 16.8	211 4 16.9	212 4 17.0	213 4 17.0	214 4 17.1	215 4 17.1	216 4 17.1	217 4 17.1	218 4 17.1	219 4 17.1	220 4 17.1	221 4 17.1	222 4 17.1	223 4 17.1	224 4 17.1	20
21	210 1 21.0	211 1 21.1	212 1 21.2	213 1 21.2	214 1 21.3	215 1 21.3	216 1 21.3	217 1 21.3	218 1 21.3	219 1 21.3	220 1 21.3	221 1 21.3	222 1 21.3	223 1 21.3	224 1 21.3	21
22	209 7 25.2	210 7 25.3	211 7 25.4	212 7 25.4	213 7 25.5	214 7 25.5	215 7 25.5	216 7 25.5	217 7 25.5	218 7 25.5	219 7 25.5	220 7 25.5	221 7 25.5	222 7 25.5	223 7 25.5	22
23	209 2 29.4	210 2 29.5	211 2 29.6	212 2 29.6	213 2 29.7	214 2 29.7	215 2 29.7	216 2 29.7	217 2 29.7	218 2 29.7	219 2 29.7	220 2 29.7	221 2 29.7	222 2 29.7	223 2 29.7	23
24	208 7 33.5	209 7 33.6	210 7 33.7	211 7 33.8	212 7 33.8	213 7 33.9	214 7 33.9	215 7 33.9	216 7 33.9	217 7 33.9	218 7 33.9	219 7 33.9	220 7 33.9	221 7 33.9	222 7 33.9	24
25	208 0 37.7	209 0 37.9	210 0 38.0	211 0 38.0	212 0 38.1	213 0 38.1	214 0 38.1	215 0 38.1	216 0 38.1	217 0 38.1	218 0 38.1	219 0 38.1	220 0 38.1	221 0 38.1	222 0 38.1	25
26	207 3 41.8	208 3 42.0	209 3 42.1	210 3 42.2	211 3 42.2	212 3 42.3	213 3 42.3	214 3 42.3	215 3 42.3	216 3 42.3	217 3 42.3	218 3 42.3	219 3 42.3	220 3 42.3	221 3 42.3	26
27	206 6 46.0	207 6 46.2	208 6 46.3	209 6 46.4	210 6 46.4	211 6 46.5	212 6 46.5	213 6 46.5	214 6 46.5	215 6 46.5	216 6 46.5	217 6 46.5	218 6 46.5	219 6 46.5	220 6 46.5	27
28	205 7 50.1	206 7 50.2	207 7 50.3	208 7 50.3	209 7 50.4	210 7 50.4	211 7 50.4	212 7 50.4	213 7 50.4	214 7 50.4	215 7 50.4	216 7 50.4	217 7 50.4	218 7 50.4	219 7 50.4	28
29	204 8 54.2	205 8 54.3	206 8 54.4	207 8 54.4	208 8 54.5	209 8 54.5	210 8 54.5	211 8 54.5	212 8 54.5	213 8 54.5	214 8 54.5	215 8 54.5	216 8 54.5	217 8 54.5	218 8 54.5	29
30	203 8 58.3	204 8 58.5	205 8 58.6	206 8 58.6	207 8 58.7	208 8 58.7	209 8 58.7	210 8 58.7	211 8 58.7	212 8 58.7	213 8 58.7	214 8 58.7	215 8 58.7	216 8 58.7	217 8 58.7	30
31	202 8 62.4	203 8 62.6	204 8 62.7	205 8 62.7	206 8 62.8	207 8 62.8	208 8 62.8	209 8 62.8	210 8 62.8	211 8 62.8	212 8 62.8	213 8 62.8	214 8 62.8	215 8 62.8	216 8 62.8	31
32	201 7 66.4	202 7 66.6	203 7 66.7	204 7 66.7	205 7 66.8	206 7 66.8	207 7 66.8	208 7 66.8	209 7 66.8	210 7 66.8	211 7 66.8	212 7 66.8	213 7 66.8	214 7 66.8	215 7 66.8	32
33	200 5 70.5	201 5 70.6	202 5 70.7	203 5 70.7	204 5 70.8	205 5 70.8	206 5 70.8	207 5 70.8	208 5 70.8	209 5 70.8	210 5 70.8	211 5 70.8	212 5 70.8	213 5 70.8	214 5 70.8	33
34	199 2 74.5	200 2 74.6	201 2 74.7	202 2 74.7	203 2 74.8	204 2 74.8	205 2 74.8	206 2 74.8	207 2 74.8	208 2 74.8	209 2 74.8	210 2 74.8	211 2 74.8	212 2 74.8	213 2 74.8	34
35	197 9 78.5	198 9 78.6	199 9 78.7	200 9 78.7	201 9 78.8	202 9 78.8	203 9 78.8	204 9 78.8	205 9 78.8	206 9 78.8	207 9 78.8	208 9 78.8	209 9 78.8	210 9 78.8	211 9 78.8	35
36	195 5 82.4	196 5 82.5	197 5 82.6	198 5 82.6	199 5 82.7	200 5 82.7	201 5 82.7	202 5 82.7	203 5 82.7	204 5 82.7	205 5 82.7	206 5 82.7	207 5 82.7	208 5 82.7	209 5 82.7	36
37	192 5 86.4	193 5 86.5	194 5 86.6	195 5 86.6	196 5 86.7	197 5 86.7	198 5 86.7	199 5 86.7	200 5 86.7	201 5 86.7	202 5 86.7	203 5 86.7	204 5 86.7	205 5 86.7	206 5 86.7	37
38	189 9 90.3	190 9 90.4	191 9 90.5	192 9 90.5	193 9 90.6	194 9 90.6	195 9 90.6	196 9 90.6	197 9 90.6	198 9 90.6	199 9 90.6	200 9 90.6	201 9 90.6	202 9 90.6	203 9 90.6	38
39	187 3 94.2	188 3 94.3	189 3 94.4	190 3 94.4	191 3 94.5	192 3 94.5	193 3 94.5	194 3 94.5	195 3 94.5	196 3 94.5	197 3 94.5	198 3 94.5	199 3 94.5	200 3 94.5	201 3 94.5	39
40	184 6 98.0	185 6 98.1	186 6 98.2	187 6 98.2	188 6 98.3	189 6 98.3	190 6 98.3	191 6 98.3	192 6 98.3	193 6 98.3	194 6 98.3	195 6 98.3	196 6 98.3	197 6 98.3	198 6 98.3	40
41	181 9 101.9	182 9 102.0	183 9 102.1	184 9 102.1	185 9 102.2	186 9 102.2	187 9 102.2	188 9 102.2	189 9 102.2	190 9 102.2	191 9 102.2	192 9 102.2	193 9 102.2	194 9 102.2	195 9 102.2	41
42	179 1 105.6	180 1 105.7	181 1 105.8	182 1 105.8	183 1 105.9	184 1 105.9	185 1 105.9	186 1 105.9	187 1 105.9	188 1 105.9	189 1 105.9	190 1 105.9	191 1 105.9	192 1 105.9	193 1 105.9	42
43	176 3 109.4	177 3 109.5	178 3 109.6	179 3 109.6	180 3 109.7	181 3 109.7	182 3 109.7	183 3 109.7	184 3 109.7	185 3 109.7	186 3 109.7	187 3 109.7	188 3 109.7	189 3 109.7	190 3 109.7	43
44	173 4 113.1	174 4 113.2	175 4 113.3	176 4 113.3	177 4 113.4	178 4 113.4	179 4 113.4	180 4 113.4	181 4 113.4	182 4 113.4	183 4 113.4	184 4 113.4	185 4 113.4	186 4 113.4	187 4 113.4	44
45	170 4 116.8	171 4 116.9	172 4 117.0	173 4 117.0	174 4 117.1	175 4 117.1	176 4 117.1	177 4 117.1	178 4 117.1	179 4 117.1	180 4 117.1	181 4 117.1	182 4 117.1	183 4 117.1	184 4 117.1	45

Traverse Table.

(x.)

Distance 249		250		251		252		253		254		255		256		
Cons.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Cons.	
1	248.7	12.2	249.7	12.3	250.7	12.3	251.7	12.4	252.7	12.4	253.7	12.5	254.7	12.5	255.7	12.6
2	247.8	24.4	248.8	24.5	249.8	24.6	250.8	24.7	251.8	24.8	252.8	24.9	253.8	25.0	254.8	25.1
3	246.3	36.5	247.3	36.7	248.3	36.8	249.3	37.0	250.3	37.1	251.2	37.3	252.2	37.4	253.2	37.6
4	244.2	48.6	245.2	48.8	246.2	49.0	247.2	49.2	248.1	49.4	249.1	49.6	250.1	49.7	251.1	49.9
5	241.5	60.5	242.5	60.7	243.5	61.0	244.5	61.2	245.4	61.5	246.4	61.7	247.4	62.0	248.3	62.2
6	238.3	72.3	239.2	72.6	240.2	72.9	241.2	73.1	242.1	73.4	243.1	73.7	244.0	74.0	245.0	74.3
7	234.4	83.9	235.4	84.2	236.3	84.6	237.3	84.9	238.2	85.2	239.1	85.6	240.1	85.9	241.0	86.2
8	230.1	95.3	231.0	95.7	231.9	96.1	232.8	96.4	233.7	96.8	234.7	97.2	235.6	97.6	236.5	98.0
9	225.1	106.5	226.0	106.9	226.9	107.3	227.8	107.8	228.7	108.2	229.6	108.6	230.5	109.0	231.4	109.5
10	219.6	117.4	220.5	117.8	221.4	118.3	222.2	118.8	223.1	119.3	224.0	119.7	224.9	120.2	225.8	120.7
11	213.6	128.0	214.4	128.5	215.3	129.0	216.1	129.5	217.0	130.1	217.9	130.6	218.7	131.1	219.6	131.6
12	207.0	138.3	207.9	138.9	208.7	139.4	209.5	140.0	210.1	140.6	211.2	141.3	212.0	141.7	212.9	142.5
13	200.0	148.3	200.8	148.9	201.6	149.5	202.4	150.1	203.2	150.7	204.0	151.3	204.8	151.9	205.6	152.6
14	192.5	158.0	193.2	158.6	194.0	159.2	194.8	159.9	195.6	160.5	196.3	161.1	197.1	161.8	197.9	162.4
15	184.5	167.2	185.2	167.9	186.0	168.5	186.7	169.2	187.5	169.9	188.2	170.6	188.9	171.2	189.7	171.9
16	176.1	176.1	176.8	176.8	177.5	177.5	178.2	178.2	178.9	178.9	179.6	179.6	180.3	180.3	181.0	181.0
17	249.0	04.3	250.0	04.4	251.0	04.4	252.0	04.4	253.0	04.4	254.0	04.4	255.0	04.5	256.0	04.5
18	248.8	08.7	249.8	08.7	250.8	08.8	251.8	08.8	252.8	08.8	253.8	08.9	254.8	08.9	255.8	08.9
19	248.7	13.0	249.7	13.1	250.7	13.1	251.7	13.2	252.7	13.2	253.7	13.3	254.7	13.3	255.7	13.4
20	248.4	17.4	249.4	17.4	250.4	17.5	251.4	17.6	252.4	17.6	253.4	17.7	254.4	17.8	255.4	17.9
21	248.1	21.7	249.1	21.8	250.1	21.9	251.1	22.0	252.1	22.1	253.1	22.1	254.1	22.2	255.1	22.3
22	247.6	26.0	248.6	26.1	249.6	26.2	250.6	26.3	251.6	26.4	252.6	26.6	253.6	26.7	254.6	26.8
23	247.1	30.3	248.1	30.5	249.1	30.6	250.1	30.7	251.1	30.8	252.1	31.0	253.1	31.1	254.1	31.2
24	246.6	34.7	247.6	34.8	248.6	34.9	249.5	35.1	250.5	35.2	251.5	35.3	252.5	35.5	253.5	35.6
25	245.9	39.0	246.9	39.1	247.9	39.3	248.9	39.4	249.9	39.6	250.9	39.7	251.9	39.9	252.9	40.0
26	245.2	43.2	246.2	43.4	247.2	43.6	248.2	43.8	249.2	43.9	250.1	44.1	251.1	44.3	252.1	44.5
27	244.4	47.5	245.4	47.7	246.4	47.9	247.4	48.1	248.4	48.3	249.3	48.5	250.3	48.7	251.3	48.9
28	243.6	51.8	244.5	52.0	245.5	52.2	246.5	52.4	247.5	52.6	248.1	52.8	249.4	53.0	250.4	53.2
29	242.6	56.0	243.6	56.2	244.6	56.5	245.5	56.7	246.5	56.9	247.5	57.1	248.5	57.4	249.4	57.6
30	241.6	60.2	242.6	60.5	243.5	60.7	244.5	61.0	245.5	61.2	246.5	61.4	247.4	61.7	248.4	61.9
31	240.5	64.4	241.5	64.7	242.4	65.0	243.4	65.2	244.4	65.6	245.3	65.7	246.3	66.0	247.3	66.3
32	239.4	68.6	240.3	68.9	241.3	69.2	242.2	69.5	243.2	69.7	244.2	70.0	245.1	70.3	246.1	70.6
33	238.1	72.8	239.1	73.1	240.0	73.4	241.0	73.7	242.0	74.0	242.9	74.3	243.9	74.6	244.8	74.9
34	236.8	76.9	237.8	77.3	238.7	77.6	239.7	77.9	240.6	78.2	241.6	78.5	242.5	78.8	243.5	79.1
35	235.4	81.1	236.4	81.4	237.3	81.7	238.3	82.0	239.2	82.4	240.2	82.7	241.1	83.0	242.1	83.3
36	234.0	85.2	234.9	85.5	235.9	85.8	236.8	86.2	237.7	86.5	238.7	86.9	239.6	87.2	240.6	87.6
37	232.5	89.2	233.4	89.6	234.3	90.0	235.3	90.3	236.2	90.7	237.1	91.0	238.1	91.4	239.0	91.7
38	230.9	93.3	231.8	93.7	232.7	94.0	233.7	94.4	234.6	94.8	235.5	95.2	236.4	95.5	237.4	95.8
39	229.2	97.3	230.1	97.7	231.0	98.1	232.0	98.5	232.9	98.9	233.8	99.2	234.7	99.6	235.6	100.0
40	227.5	101.3	228.4	101.7	229.3	102.1	230.2	102.5	231.1	102.9	232.0	103.3	233.0	103.7	233.9	104.1
41	225.7	105.2	226.6	105.7	227.5	106.1	228.4	106.5	229.3	106.9	230.2	107.3	231.1	107.8	232.0	108.2
42	223.8	109.2	224.7	109.6	225.6	110.0	226.5	110.5	227.4	110.9	228.3	111.3	229.2	111.8	230.1	112.2
43	221.9	113.0	222.8	113.5	223.6	114.0	224.5	114.4	225.4	114.9	226.3	115.3	227.2	115.8	228.1	116.2
44	219.9	116.9	220.7	117.4	221.6	117.8	222.5	118.3	223.4	118.8	224.3	119.2	225.2	119.7	226.0	120.2
45	217.8	120.7	218.7	121.2	219.5	121.7	220.4	122.2	221.3	122.7	222.2	123.1	223.0	123.6	223.9	124.1
46	215.6	124.5	216.5	125.0	217.4	125.5	218.2	126.0	219.1	126.5	220.0	127.0	220.8	127.5	221.7	128.0
47	213.4	128.2	214.3	128.8	215.1	129.3	216.0	129.8	216.9	130.3	217.7	130.8	218.6	131.3	219.4	131.8
48	211.2	131.9	212.0	132.5	212.9	133.0	213.7	133.5	214.6	134.1	215.4	134.6	216.3	135.1	217.1	135.7
49	208.8	135.6	209.7	136.2	210.5	136.7	211.3	137.2	212.2	137.8	213.0	138.3	213.9	138.9	214.7	139.4
50	206.4	139.2	207.3	139.8	208.1	140.4	208.9	140.9	209.7	141.5	210.6	142.0	211.4	142.6	212.2	143.2
51	204.0	142.8	204.8	143.4	205.6	144.0	206.4	144.5	207.2	145.1	208.1	145.7	208.9	146.3	209.7	146.8
52	201.4	146.4	202.3	146.9	203.1	147.5	203.9	148.1	204.7	148.7	205.5	149.3	206.3	149.9	207.1	150.5
53	198.9	149.9	199.7	150.5	200.5	151.1	201.3	151.7	202.1	152.3	202.9	152.9	203.7	153.5	204.5	154.1
54	196.2	153.3	197.0	153.9	197.8	154.5	198.6	155.1	199.4	155.8	200.2	156.4	200.9	157.0	201.7	157.6
55	193.5	156.7	194.3	157.3	195.1	158.0	195.8	158.6	196.6	159.2	197.4	159.8	198.2	160.5	198.9	161.1
56	190.7	160.1	191.5	160.7	192.3	161.3	193.0	162.0	193.8	162.6	194.6	163.3	195.3	163.9	196.1	164.6
57	187.9	163.4	188.7	164.0	189.4	164.7	190.2	165.3	190.9	166.0	191.7	166.6	192.5	167.3	193.2	168.0
58	185.0	166.6	185.8	167.3	186.5	168.0	187.3	168.6	188.0	169.3	188.8	170.0	189.5	170.6	190.2	171.3
59	182.1	169.8	182.8	170.5	183.6	171.2	184.3	171.9	185.0	172.5	185.8	173.2	186.5	173.9	187.2	174.6
60	179.1	173.0	179.8	173.7	180.6	174.4	181.3	175.1	182.0	175.7	182.7	176.4	183.4	177.1	184.2	177.8
61	176.1	176.1	176.8	176.8	177.5	177.5	178.2	178.2	178.9	178.9	179.6	179.6	180.3	180.3	181.0	181.0

Traverse Table

(x.)

Distance. 257		258		259		260		261		262		263		264		
Course	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Course	
1	256.7	12.6	257.7	12.7	258.7	12.7	259.7	12.8	260.7	12.8	261.7	12.9	262.7	12.9	263.7	13.0
2	255.8	25.2	256.8	25.3	257.8	25.4	258.7	25.5	259.7	25.6	260.7	25.7	261.7	25.8	262.7	25.9
3	254.2	37.7	255.2	37.9	256.2	38.0	257.2	38.1	258.2	38.3	259.2	38.4	260.1	38.6	261.1	38.7
4	252.1	50.1	253.0	50.3	254.0	50.5	255.0	50.7	256.0	50.9	257.0	51.1	257.9	51.3	258.9	51.5
5	249.3	62.5	250.3	62.7	251.2	62.9	252.2	63.2	253.2	63.4	254.2	63.7	255.1	63.9	256.1	64.2
6	245.9	74.6	246.9	74.9	247.9	75.2	248.8	75.5	249.8	75.8	250.7	76.0	251.7	76.3	252.6	76.6
7	242.0	86.6	242.9	86.9	243.9	87.2	244.8	87.6	245.7	87.9	246.7	88.3	247.6	88.6	248.6	88.9
8	237.4	98.4	238.4	98.7	239.3	99.1	240.2	99.5	241.1	99.9	242.1	100.3	243.0	100.6	243.9	101.0
9	232.3	109.9	233.2	110.3	234.1	110.7	235.0	111.2	235.9	111.6	236.8	112.0	237.7	112.5	238.7	112.9
10	226.7	121.1	227.5	121.6	228.4	122.1	229.3	122.6	230.2	123.0	231.1	123.5	231.9	124.0	232.8	124.4
11	220.4	132.1	221.3	132.6	222.1	133.1	223.0	133.7	223.9	134.2	224.7	134.7	225.6	135.2	226.4	135.7
12	213.7	142.8	214.5	143.3	215.3	143.9	216.2	144.4	217.0	145.0	217.8	145.6	218.7	146.1	219.5	146.7
13	206.4	153.1	207.2	153.7	208.0	154.3	208.8	154.9	209.6	155.5	210.4	156.1	211.2	156.7	212.0	157.3
14	198.7	163.0	199.4	163.7	200.2	164.3	201.0	164.9	201.8	165.6	202.5	166.2	203.3	166.8	204.1	167.5
15	190.4	172.6	191.2	173.2	191.9	173.9	192.6	174.6	193.4	175.3	194.1	175.9	194.9	176.6	195.6	177.3
16	181.7	181.7	182.4	182.4	183.1	183.1	183.8	183.8	184.6	184.6	185.3	185.3	186.0	186.7	186.7	187.4
17	172.5	190.0	173.2	190.7	173.9	191.4	174.6	192.1	175.3	192.6	176.5	193.1	177.0	193.9	194.8	195.7
18	162.8	197.8	163.5	198.3	164.2	198.8	164.9	199.3	165.6	199.8	166.3	200.3	167.0	200.8	201.5	202.2
19	152.6	205.1	153.3	205.6	154.0	206.1	154.7	206.6	155.4	207.1	156.1	207.6	156.8	208.3	209.0	209.7
20	141.9	211.9	142.6	212.4	143.3	212.9	144.0	213.4	144.7	213.9	145.4	214.4	146.1	214.9	215.6	216.3
21	130.7	218.2	131.4	218.7	132.1	219.2	132.8	219.6	133.5	220.1	134.2	220.6	134.9	221.4	222.1	222.8
22	119.0	224.0	119.7	224.5	120.4	225.0	121.1	225.5	121.8	226.0	122.5	226.5	123.2	227.0	227.7	228.4
23	106.8	229.3	107.5	229.8	108.2	230.3	108.9	230.8	109.6	231.3	110.3	231.8	111.0	232.3	233.0	233.7
24	94.1	234.1	94.8	234.6	95.5	235.1	96.2	235.6	96.9	236.1	97.6	236.6	98.3	237.1	237.8	238.5
25	80.9	238.4	81.6	238.9	82.3	239.4	83.0	239.9	83.7	240.4	84.4	240.9	85.1	241.4	242.1	242.8
26	67.2	242.2	67.9	242.7	68.6	243.2	69.3	243.7	70.0	244.2	70.7	244.7	71.4	245.2	245.9	246.6
27	53.0	245.5	53.7	246.0	54.4	246.5	55.1	247.0	55.8	247.5	56.5	248.0	57.2	248.7	249.4	250.1
28	38.3	248.3	39.0	248.8	39.7	249.3	40.4	249.8	41.1	250.3	41.8	250.8	42.5	251.3	252.0	252.7
29	23.1	250.6	23.8	251.1	24.5	251.6	25.2	252.1	25.9	252.6	26.6	253.1	27.3	253.6	254.3	255.0
30	7.4	252.4	8.1	252.9	8.8	253.4	9.5	253.9	10.2	254.4	10.9	254.9	11.6	255.4	256.1	256.8
31	0.0	253.7	0.7	254.2	1.4	254.7	2.1	255.2	2.8	255.7	3.5	256.2	4.2	256.7	257.4	258.1
32	-12.8	254.5	-12.1	255.0	-11.4	255.5	-10.7	256.0	-10.0	256.5	-9.3	257.0	-8.6	257.5	258.2	258.9
33	-25.9	254.8	-25.2	255.3	-24.5	255.8	-23.8	256.3	-23.1	256.8	-22.4	257.3	-21.7	257.8	258.5	259.2
34	-38.2	254.6	-37.5	255.1	-36.8	255.6	-36.1	256.1	-35.4	256.6	-34.7	257.1	-34.0	257.6	258.3	259.0
35	-50.0	253.9	-49.3	254.4	-48.6	254.9	-47.9	255.4	-47.2	255.9	-46.5	256.4	-45.8	256.9	257.6	258.3
36	-61.3	252.7	-60.6	253.2	-59.9	253.7	-59.2	254.2	-58.5	254.7	-57.8	255.2	-57.1	255.7	256.4	257.1
37	-72.1	251.0	-71.4	251.5	-70.7	252.0	-70.0	252.5	-69.3	253.0	-68.6	253.5	-67.9	254.0	254.7	255.4
38	-82.4	248.8	-81.7	249.3	-81.0	249.8	-80.3	250.3	-79.6	250.8	-78.9	251.3	-78.2	251.8	252.5	253.2
39	-92.2	246.1	-91.5	246.6	-90.8	247.1	-90.1	247.6	-89.4	248.1	-88.7	248.6	-88.0	249.1	249.8	250.5
40	-101.5	242.9	-100.8	243.4	-100.1	243.9	-99.4	244.4	-98.7	244.9	-98.0	245.4	-97.3	245.9	246.6	247.3
41	-110.3	239.2	-109.6	239.7	-108.9	240.2	-108.2	240.7	-107.5	241.2	-106.8	241.7	-106.1	242.2	242.9	243.6
42	-118.6	235.0	-117.9	235.5	-117.2	236.0	-116.5	236.5	-115.8	237.0	-115.1	237.5	-114.4	238.0	238.7	239.4
43	-126.4	230.3	-125.7	230.8	-125.0	231.3	-124.3	231.8	-123.6	232.3	-122.9	232.8	-122.2	233.3	234.0	234.7
44	-133.7	225.1	-133.0	225.6	-132.3	226.1	-131.6	226.6	-130.9	227.1	-130.2	227.6	-129.5	228.1	228.8	229.5
45	-140.5	219.4	-139.8	219.9	-139.1	220.4	-138.4	220.9	-137.7	221.4	-137.0	221.9	-136.3	222.4	223.1	223.8
46	-146.8	213.2	-146.1	213.7	-145.4	214.2	-144.7	214.7	-144.0	215.2	-143.3	215.7	-142.6	216.2	216.9	217.6
47	-152.6	206.5	-151.9	207.0	-151.2	207.5	-150.5	208.0	-149.8	208.5	-149.1	209.0	-148.4	209.5	210.2	210.9
48	-157.9	199.3	-157.2	199.8	-156.5	200.3	-155.8	200.8	-155.1	201.3	-154.4	201.8	-153.7	202.3	203.0	203.7
49	-162.7	191.6	-162.0	192.1	-161.3	192.6	-160.6	193.1	-159.9	193.6	-159.2	194.1	-158.5	194.6	195.3	196.0
50	-167.0	183.4	-166.3	183.9	-165.6	184.4	-164.9	184.9	-164.2	185.4	-163.5	185.9	-162.8	186.4	187.1	187.8
51	-170.8	174.7	-170.1	175.2	-169.4	175.7	-168.7	176.2	-168.0	176.7	-167.3	177.2	-166.6	177.7	178.4	179.1
52	-174.1	165.5	-173.4	166.0	-172.7	166.5	-172.0	167.0	-171.3	167.5	-170.6	168.0	-169.9	168.5	169.2	169.9
53	-176.9	155.8	-176.2	156.3	-175.5	156.8	-174.8	157.3	-174.1	157.8	-173.4	158.3	-172.7	158.8	159.5	160.2
54	-179.2	145.6	-178.5	146.1	-177.8	146.6	-177.1	147.1	-176.4	147.6	-175.7	148.1	-175.0	148.6	149.3	150.0
55	-181.0	135.0	-180.3	135.5	-179.6	136.0	-178.9	136.5	-178.2	137.0	-177.5	137.5	-176.8	138.0	138.7	139.4
56	-182.3	124.0	-181.6	124.5	-180.9	125.0	-180.2	125.5	-179.5	126.0	-178.8	126.5	-178.1	127.0	127.7	128.4
57	-183.1	112.6	-182.4	113.1	-181.7	113.6	-181.0	114.1	-180.3	114.6	-179.6	115.1	-178.9	115.6	116.3	117.0
58	-183.4	100.9	-182.7	101.4	-182.0	101.9	-181.3	102.4	-180.6	102.9	-179.9	103.4	-179.2	103.9	104.6	105.3
59	-183.2	88.9	-182.5	89.4	-181.8	90.0	-181.1	90.5	-180.4	91.0	-179.7	91.5	-179.0	92.0	92.7	93.4
60	-182.5	76.6	-181.8	77.1	-181.1	77.6	-180.4	78.1	-179.7	78.6	-179.0	79.1	-178.3	79.6	80.3	81.0
61	-181.3	64.0	-180.6	64.5	-179.9	65.0	-179.2	65.5	-178.5	66.0	-177.8	66.5	-177.1	67.0	67.7	68.4
62	-179.6	51.1	-178.9	51.6	-178.2	52.1	-177.5	52.6	-176.8	53.1	-176.1	53.6	-175.4	54.1	54.8	55.5
63	-177.4	37.9	-176.7	38.4	-176.0	38.9	-175.3	39.4	-174.6	39.9	-173.9	40.4	-173.2	40.9	41.6	42.3
64	-174.7	24.4	-174.0	24.9	-173.3	25.4	-172.6	25.9	-171.9	26.4	-171.2	26.9	-170.5	27.4	28.1	28.8
65	-171.5	10.6	-170.8	11.1	-170.1	11.6	-169.4	12.1	-168.7	12.6	-168.0	13.1	-167.3	13.6	14.3	15.0
66	-167.8	-2.1	-167.1	-1.6	-166.4	-1.1	-165.7	-0.6	-165.0	-0.1	-164.3	0.4	-163.6	0.9	1.6	2.3
67	-163.6	-13.4	-162.9	-12.9	-162.2	-12.4	-161.5	-11.9	-160.8	-11.4	-160.1	-10.9	-159.4	-10.4	-9.7	-9.0
68	-158.9	-24.6	-158.2	-24.1	-157.5	-23.6	-156.8	-23.1	-156.1	-22.6	-155.4	-22.1	-154.7	-21.6	-20.9	-20.2
69	-153.7	-35.8	-153.0	-35.3	-152.3	-34.8	-151.6	-34.3	-150.9	-33.8	-150.2	-33.3	-149.5	-32.8	-32.1	-31.4
70	-148.0	-46.9	-147.3	-46.4	-146.6	-45.9	-145.9	-45.4	-145.2	-44.9	-144.5	-44.4	-143.8	-43.9	-43.2	-42.5
71	-141.8	-57.8	-141.1	-57.3	-140.4	-56.8	-139.7	-56.3	-139.0	-55.8	-138.3	-55.3				

Traverse Table.

(L)

Distance.	265	266	267	268	269	270	271	272	
Course.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Course.
1	264.7	13.0	265.7	13.1	266.7	13.2	267.7	13.3	71
2	263.7	26.0	264.7	26.1	265.7	26.2	266.7	26.3	72
3	262.1	38.9	263.1	39.0	264.1	39.2	265.1	39.3	73
4	259.9	51.7	260.9	51.9	261.9	52.1	262.8	52.3	74
5	257.1	64.4	258.0	64.6	259.0	64.9	260.0	65.1	75
6	253.6	76.9	254.6	77.2	255.5	77.5	256.5	77.8	76
7	249.5	89.3	250.4	89.6	251.4	89.9	252.3	90.3	77
8	244.8	101.4	245.8	101.8	246.7	102.2	247.6	102.6	78
9	239.6	113.3	240.5	113.7	241.4	114.2	242.3	114.6	79
10	233.7	124.9	234.6	125.4	235.5	125.9	236.4	126.3	80
11	227.3	136.2	228.2	136.7	229.0	137.2	229.9	137.8	81
12	220.3	147.2	221.2	147.8	222.0	148.3	222.8	148.9	82
13	212.8	157.9	213.6	158.5	214.5	159.1	215.3	159.6	83
14	204.8	168.1	205.6	168.7	206.4	169.4	207.2	170.0	84
15	196.3	178.0	197.1	178.6	197.8	179.3	198.6	180.0	85
16	187.4	187.4	188.1	188.1	188.8	188.8	189.5	190.2	86
17	265.0	04.6	266.0	04.6	267.0	04.7	268.0	04.7	87
18	264.8	09.2	265.8	09.3	266.8	09.3	267.8	09.4	88
19	264.6	13.9	265.6	13.9	266.6	14.0	267.6	14.0	89
20	264.1	18.5	265.4	18.6	266.3	18.6	267.3	18.7	90
21	264.0	23.1	265.0	23.2	266.0	23.3	267.0	23.4	91
22	263.5	27.7	264.5	27.8	265.5	27.9	266.5	28.0	92
23	263.0	32.3	264.0	32.4	265.0	32.5	266.0	32.6	93
24	262.4	36.9	263.4	37.0	264.4	37.1	265.4	37.2	94
25	261.7	41.5	262.7	41.6	263.7	41.8	264.7	41.9	95
26	261.0	46.0	262.0	46.2	262.9	46.4	263.9	46.5	96
27	260.1	50.6	261.1	50.8	262.1	50.9	263.1	51.1	97
28	259.2	55.1	260.2	55.3	261.2	55.5	262.1	55.7	98
29	258.2	59.6	259.2	59.8	260.2	60.1	261.1	60.3	99
30	257.1	64.1	258.1	64.4	259.1	64.6	260.0	64.8	100
31	256.0	68.6	256.9	68.9	257.9	69.1	258.8	69.3	101
32	254.7	73.0	255.7	73.2	256.7	73.6	257.6	73.9	102
33	253.4	77.5	254.4	77.8	255.3	78.1	256.3	78.4	103
34	252.0	81.9	253.0	82.2	253.9	82.5	254.9	82.8	104
35	250.6	86.3	251.5	86.6	252.5	86.9	253.4	87.3	105
36	249.0	90.6	250.0	91.0	250.9	91.3	251.8	91.7	106
37	247.4	95.0	248.3	95.3	249.3	95.7	250.2	96.0	107
38	245.7	99.3	246.6	99.6	247.6	100.0	248.5	100.4	108
39	243.9	103.5	244.9	103.9	245.8	104.3	246.7	104.7	109
40	242.1	107.8	243.0	108.2	243.9	108.6	244.8	109.0	110
41	240.2	112.0	241.1	112.4	242.0	112.8	242.9	113.3	111
42	238.2	116.2	239.1	116.6	240.0	117.0	240.9	117.5	112
43	236.1	120.3	237.0	120.8	237.9	121.2	238.8	121.7	113
44	234.0	124.4	234.9	124.9	235.7	125.3	236.6	125.8	114
45	231.8	128.5	232.6	129.0	233.5	129.4	234.4	129.9	115
46	229.5	132.6	230.4	133.0	231.2	133.5	232.1	134.0	116
47	227.1	136.6	228.0	137.0	228.9	137.8	229.7	138.6	117
48	224.7	140.4	225.6	141.0	226.4	141.5	227.3	142.0	118
49	222.2	144.3	223.1	144.9	223.9	145.4	224.8	146.0	119
50	219.7	148.2	220.5	148.7	221.4	149.3	222.2	149.9	120
51	217.1	152.0	217.9	152.6	218.7	153.1	219.5	153.7	121
52	214.4	155.8	215.2	156.4	216.0	156.9	216.8	157.5	122
53	211.6	159.5	212.4	160.1	213.2	160.7	214.0	161.3	123
54	208.8	163.2	209.6	163.8	210.4	164.1	211.2	165.0	124
55	205.9	166.8	206.7	167.4	207.5	168.0	208.3	168.7	125
56	203.0	170.3	203.8	171.0	204.5	171.6	205.3	172.3	126
57	200.0	173.9	200.8	174.5	201.5	175.2	202.3	175.8	127
58	196.9	177.3	197.7	178.0	198.4	178.7	199.2	179.3	128
59	193.8	180.7	194.5	181.4	195.3	182.1	196.0	183.5	129
60	190.6	184.1	191.3	184.8	192.1	185.5	192.8	186.2	130
61	187.4	187.4	188.1	188.1	188.8	188.8	189.5	190.2	131
62	184.2	190.6	185.0	191.0	185.8	191.3	186.6	191.7	132
63	181.0	194.0	181.8	194.4	182.6	194.9	183.4	195.3	133
64	177.8	197.3	178.6	197.7	179.4	198.0	179.8	198.9	134
65	174.6	200.6	175.4	201.0	176.2	201.5	177.0	201.9	135
66	171.4	203.9	172.2	204.3	173.0	204.8	173.8	205.2	136
67	168.2	207.2	169.0	207.6	169.8	208.1	170.6	208.5	137
68	165.0	210.5	165.8	210.9	166.6	211.3	167.4	211.7	138
69	161.8	213.8	162.6	214.2	163.4	214.9	164.2	215.3	139
70	158.6	217.1	159.4	217.5	160.2	218.1	161.0	218.5	140
71	155.4	220.4	156.2	220.8	157.0	221.7	157.8	222.1	141
72	152.2	223.7	153.0	224.1	153.8	224.9	154.6	225.3	142
73	149.0	227.0	149.8	227.4	150.6	228.3	151.4	228.7	143
74	145.8	230.3	146.6	230.7	147.4	231.5	148.2	231.9	144
75	142.6	233.6	143.4	234.0	144.2	234.9	145.0	235.3	145
76	139.4	236.9	140.2	237.3	141.0	238.1	141.8	238.5	146
77	136.2	240.2	137.0	240.6	137.8	241.5	138.6	241.9	147
78	133.0	243.5	133.8	243.9	134.6	244.7	135.4	245.1	148
79	129.8	246.8	130.6	247.2	131.4	248.1	132.2	248.5	149
80	126.6	250.1	127.4	250.5	128.2	251.3	129.0	251.7	150
81	123.4	253.4	124.2	253.8	125.0	254.7	125.8	255.1	151
82	120.2	256.7	121.0	257.1	121.8	258.1	122.6	258.5	152
83	117.0	260.0	117.8	260.4	118.6	261.3	119.4	261.7	153
84	113.8	263.3	114.6	263.7	115.4	264.7	116.2	265.1	154
85	110.6	266.6	111.4	267.0	112.2	267.9	113.0	268.3	155
86	107.4	269.9	108.2	270.3	109.0	271.3	109.8	271.7	156
87	104.2	273.2	105.0	273.6	105.8	274.5	106.6	274.9	157
88	101.0	276.5	101.8	276.9	102.6	277.9	103.4	278.3	158
89	97.8	279.8	98.6	280.2	99.4	281.7	100.2	282.1	159
90	94.6	283.1	95.4	283.5	96.2	284.5	97.0	284.9	160
91	91.4	286.4	92.2	286.8	93.0	287.7	93.8	288.1	161
92	88.2	289.7	89.0	290.1	89.8	291.1	90.6	291.5	162
93	85.0	293.0	85.8	293.4	86.6	294.3	87.4	294.7	163
94	81.8	296.3	82.6	296.7	83.4	297.7	84.2	298.1	164
95	78.6	299.6	79.4	300.0	80.2	300.9	81.0	301.3	165
96	75.4	302.9	76.2	303.3	77.0	304.3	77.8	304.7	166
97	72.2	306.2	73.0	306.6	73.8	307.7	74.6	308.1	167
98	69.0	309.5	69.8	309.9	70.6	310.7	71.4	311.1	168
99	65.8	312.8	66.6	313.2	67.4	314.1	68.2	314.5	169
100	62.6	316.1	63.4	316.5	64.2	317.5	65.0	317.9	170

Traverse Table.

(K)

Distance. 273		274		275		276		277		278		279		280	
Cross.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Diff. Lat. | Dep.	Cross.
1	272.7 13.4	273.7 13.4	274.7 13.5	275.7 13.5	276.7 13.6	277.7 13.6	278.7 13.7	279.7 13.7	271.7 13.6	272.7 13.6	273.6 13.7	274.6 13.7	275.6 13.7	276.6 13.7	7
2	271.7 26.8	272.7 26.9	273.7 27.0	274.7 27.1	275.7 27.2	276.7 27.3	277.7 27.3	278.7 27.4	270.7 27.2	271.7 27.2	272.6 27.3	273.6 27.3	274.6 27.4	275.6 27.4	8
3	270.0 40.1	271.0 40.2	272.0 40.3	273.0 40.5	274.0 40.6	275.0 40.8	276.0 40.9	277.0 41.1	269.0 40.6	270.0 40.6	271.0 40.9	272.0 40.9	273.0 41.1	274.0 41.1	9
4	267.8 53.3	268.7 53.5	269.7 53.6	270.7 53.8	271.7 54.0	272.7 54.2	273.6 54.4	274.6 54.6	266.8 53.8	267.7 53.8	268.7 54.4	269.6 54.4	270.6 54.6	271.6 54.6	10
5	264.8 66.3	265.8 66.6	266.8 66.8	267.7 67.1	268.7 67.3	269.7 67.6	270.6 67.8	271.6 68.0	263.8 66.6	264.7 66.6	265.7 67.6	266.6 67.6	267.6 68.0	268.6 68.0	11
6	261.2 79.2	262.2 79.5	263.2 79.8	264.1 80.1	265.1 80.4	266.0 80.7	267.0 81.0	267.9 81.3	260.2 79.5	261.1 79.5	262.1 80.7	263.0 80.7	264.0 81.0	265.0 81.3	12
7	257.0 92.0	258.0 92.3	258.9 92.6	259.9 93.0	260.8 93.3	261.7 93.7	262.7 94.0	263.6 94.3	256.0 92.3	256.9 92.3	257.9 93.7	258.8 93.7	259.8 94.0	260.8 94.3	13
8	252.2 104.5	253.1 104.9	254.1 105.2	255.0 105.6	255.9 106.0	256.8 106.4	257.8 106.8	258.7 107.2	251.2 104.9	252.1 104.9	253.1 106.4	254.0 106.4	255.0 106.8	256.0 107.2	14
9	246.8 116.7	247.7 117.2	248.6 117.6	249.5 118.0	250.4 118.4	251.3 118.9	252.2 119.3	253.1 119.7	245.8 117.2	246.7 117.2	247.7 118.9	248.6 118.9	249.6 119.3	250.6 119.7	15
10	240.8 128.7	241.7 129.2	242.5 129.6	243.4 130.1	244.3 130.6	245.2 131.0	246.1 131.5	246.9 132.0	239.8 129.2	240.7 129.2	241.7 131.0	242.6 131.0	243.6 131.5	244.5 132.0	16
11	234.2 140.3	235.0 140.9	235.9 141.4	236.7 141.9	237.6 142.4	238.4 142.9	239.3 143.4	240.2 143.9	233.2 140.9	234.1 140.9	235.1 142.9	236.0 142.9	237.0 143.4	238.0 143.9	17
12	227.0 151.7	227.8 152.2	228.6 152.6	229.5 153.3	230.3 153.9	231.1 154.4	232.0 155.0	232.8 155.6	226.0 152.2	226.9 152.2	227.9 154.4	228.8 154.4	229.8 155.0	230.8 155.6	18
13	219.3 162.6	220.1 163.2	220.9 163.8	221.7 164.4	222.5 165.0	223.3 165.6	224.1 166.2	224.9 166.8	218.3 163.2	219.2 163.2	220.2 165.6	221.1 165.6	222.1 166.2	223.1 166.8	19
14	211.0 173.2	211.8 173.8	212.6 174.5	213.3 175.1	214.1 175.7	214.9 176.4	215.7 177.0	216.4 177.6	210.2 173.8	211.1 173.8	212.1 176.4	213.0 176.4	214.0 177.0	215.0 177.6	20
15	202.3 183.3	203.0 184.0	203.8 184.7	204.5 185.3	205.2 186.0	206.0 186.7	206.7 187.4	207.5 188.0	201.2 184.0	202.1 184.0	203.1 186.7	204.0 186.7	205.0 187.4	206.0 188.0	21
16	193.0 193.0	193.7 193.7	194.5 194.5	195.2 195.2	195.9 195.9	196.6 196.6	197.3 197.3	198.0 198.0	192.0 193.0	192.9 193.0	193.9 196.6	194.8 196.6	195.8 197.3	196.8 198.0	22
17	273.0 04.8	274.0 04.8	275.0 04.8	276.0 04.8	277.0 04.8	278.0 04.9	279.0 04.9	280.0 04.9	272.0 04.8	273.0 04.8	274.0 04.9	275.0 04.9	276.0 04.9	277.0 04.9	89°
18	272.8 09.5	273.8 09.6	274.8 09.6	275.8 09.6	276.8 09.7	277.8 09.7	278.8 09.7	279.8 09.8	271.8 09.5	272.8 09.5	273.8 09.6	274.8 09.6	275.8 09.7	276.8 09.7	88
19	272.6 14.3	273.6 14.3	274.6 14.4	275.6 14.4	276.6 14.5	277.6 14.5	278.6 14.6	279.6 14.7	271.6 14.3	272.6 14.3	273.6 14.4	274.6 14.4	275.6 14.5	276.6 14.5	87
20	272.3 19.0	273.3 19.1	274.3 19.2	275.3 19.3	276.3 19.3	277.3 19.4	278.3 19.5	279.3 19.5	271.3 19.0	272.3 19.0	273.3 19.1	274.3 19.1	275.3 19.3	276.3 19.3	86
21	272.0 23.8	273.0 23.9	274.0 24.0	274.9 24.1	275.9 24.1	276.9 24.2	277.9 24.3	278.9 24.4	271.0 23.8	272.0 23.8	273.0 23.9	274.0 23.9	275.0 24.1	276.0 24.1	85
22	271.5 28.5	272.5 28.6	273.5 28.7	274.5 28.8	275.5 29.0	276.5 29.1	277.5 29.2	278.5 29.3	270.5 28.5	271.5 28.5	272.5 28.6	273.5 28.6	274.5 28.8	275.5 28.8	84
23	271.0 33.3	272.0 33.4	273.0 33.5	273.9 33.6	274.9 33.8	275.9 33.9	276.9 34.0	277.9 34.1	270.0 33.3	271.0 33.3	272.0 33.4	273.0 33.4	274.0 33.6	275.0 33.6	83
24	270.3 38.0	271.3 38.1	272.3 38.3	273.3 38.4	274.3 38.6	275.3 38.7	276.3 38.8	277.3 39.0	269.3 38.0	270.3 38.0	271.3 38.1	272.3 38.1	273.3 38.3	274.3 38.3	82
25	269.6 42.7	270.6 42.9	271.6 43.0	272.6 43.2	273.6 43.3	274.6 43.5	275.6 43.6	276.6 43.8	268.6 42.7	269.6 42.7	270.6 42.9	271.6 42.9	272.6 43.2	273.6 43.2	81
26	268.9 47.4	269.8 47.6	270.8 47.8	271.8 47.9	272.8 48.1	273.8 48.3	274.8 48.4	275.7 48.6	267.9 47.4	268.9 47.4	269.8 47.6	270.8 47.6	271.8 47.8	272.8 47.8	80
27	268.0 52.1	269.0 52.3	269.9 52.5	270.9 52.7	271.9 52.9	272.9 53.0	273.9 53.2	274.9 53.4	267.0 52.1	268.0 52.1	269.0 52.3	270.0 52.3	271.0 52.5	272.0 52.5	79
28	267.0 56.8	268.0 57.0	269.0 57.2	270.0 57.4	270.9 57.6	271.9 57.8	272.9 58.0	273.9 58.2	266.0 56.8	267.0 56.8	268.0 57.0	269.0 57.0	270.0 57.2	271.0 57.2	78
29	266.0 61.4	267.0 61.6	268.0 61.9	268.9 62.1	269.9 62.2	270.9 62.5	271.8 62.8	272.8 63.0	265.0 61.4	266.0 61.4	267.0 61.6	268.0 61.6	269.0 61.9	270.0 61.9	77
30	264.9 66.0	265.9 66.3	266.8 66.5	267.8 66.8	268.8 67.0	269.7 67.3	270.7 67.5	271.7 67.7	263.9 66.0	264.9 66.0	265.9 66.3	266.9 66.3	267.9 66.5	268.9 66.5	76
31	263.7 70.7	264.7 70.9	265.6 71.2	266.6 71.4	267.6 71.7	268.5 72.0	269.5 72.2	270.5 72.5	262.7 70.7	263.7 70.7	264.7 70.9	265.7 70.9	266.7 71.2	267.7 71.2	75
32	262.4 75.2	263.4 75.5	264.3 75.8	265.3 76.1	266.3 76.4	267.2 76.6	268.2 76.9	269.2 77.2	261.6 75.2	262.6 75.2	263.6 75.5	264.6 75.5	265.6 75.8	266.6 75.8	74
33	261.1 79.8	262.0 80.1	263.0 80.4	263.9 80.7	264.9 81.0	265.9 81.3	266.8 81.6	267.8 81.9	260.5 79.8	261.5 79.8	262.5 80.1	263.5 80.1	264.5 80.4	265.5 80.4	73
34	259.6 84.4	260.6 84.7	261.5 85.0	262.5 85.3	263.4 85.6	264.4 85.9	265.3 86.2	266.3 86.5	258.6 84.4	259.6 84.4	260.6 84.7	261.6 84.7	262.6 85.0	263.6 85.0	72
35	258.1 88.9	259.1 89.2	260.0 89.5	261.0 89.9	261.9 90.2	262.9 90.5	263.8 90.8	264.7 91.2	257.1 88.9	258.1 88.9	259.1 89.2	260.1 89.2	261.1 89.5	262.1 89.5	71
36	256.5 93.4	257.5 93.7	258.4 94.1	259.4 94.4	260.3 94.7	261.2 95.1	262.2 95.4	263.1 95.8	255.5 93.4	256.5 93.4	257.5 93.7	258.5 93.7	259.5 94.1	260.5 94.1	70
37	254.9 97.8	255.8 98.2	256.7 98.6	257.7 98.9	258.6 99.3	259.5 99.6	260.5 100.0	261.4 100.3	253.9 97.8	254.9 97.8	255.8 98.2	256.8 98.2	257.8 98.6	258.8 98.6	69
38	253.1 102.3	254.0 102.6	255.0 103.0	255.9 103.4	256.8 103.8	257.8 104.1	258.7 104.5	259.6 104.9	252.1 102.3	253.1 102.3	254.0 102.6	255.0 102.6	256.0 103.0	257.0 103.0	68
39	251.3 106.7	252.2 107.1	253.1 107.5	254.1 107.8	255.0 108.2	255.9 108.6	256.8 109.0	257.7 109.4	250.3 106.7	251.3 106.7	252.2 107.1	253.2 107.1	254.2 107.5	255.2 107.5	67
40	249.4 111.0	250.3 111.4	251.2 111.9	252.1 112.3	253.1 112.7	254.0 113.1	254.9 113.5	255.8 113.9	248.4 111.0	249.4 111.0	250.3 111.4	251.3 111.4	252.3 111.9	253.3 111.9	66
41	247.4 115.4	248.3 115.8	249.2 116.2	250.1 116.6	251.0 117.1	252.0 117.5	252.9 117.9	253.8 118.3	246.4 115.4	247.4 115.4	248.3 115.8	249.3 115.8	250.3 116.2	251.3 116.2	65
42	245.4 119.7	246.3 120.1	247.2 120.6	248.1 121.0	249.0 121.4	249.9 121.9	250.8 122.3	251.7 122.7	244.4 119.7	245.4 119.7	246.3 120.1	247.3 120.1	248.3 120.6	249.3 120.6	64
43	243.2 123.9	244.1 124.4	245.0 124.8	245.9 125.3	246.8 125.8	247.7 126.2	248.6 126.7	249.5 127.1	242.2 123.9	243.2 123.9	244.1 124.4	245.1 124.4	246.1 124.8	247.1 124.8	63
44	241.0 128.2	241.9 128.6	242.8 129.1	243.7 129.6	244.6 130.0	245.5 130.5	246.3 131.0	247.2 131.5	240.0 128.2	241.0 128.2	241.9 128.6	242.9 128.6	243.9 129.1	244.9 129.1	62
45	238.8 132.4	239.6 132.8	240.5 133.3	241.4 133.8	242.3 134.3	243.1 134.8	244.0 135.3	244.9 135.7	237.8 132.4	238.8 132.4	239.6 132.8	240.6 132.8	241.6 133.3	242.6 133.3	61
46	236.4 136.5	237.3 137.0	238.2 137.5	239.0 138.0	239.9 138.5	240.8 139.0	241.6 139.5	242.5 140.0	235.4 136.5	236.4 136.5	237.3 137.0	238.3 137.0	239.3 137.5	240.3 137.5	60
47	234.0 140.6	234.9 141.1	235.7 141.6	236.6 142.2	237.4 142.7	238.3 143.2	239.1 143.7	240.0 144.2	233.0 140.6	234.0 140.6	234.9 141.1	235.9 141.1	236.9 141.6	237.9 141.6	59
48	231.5 144.7	232.4 145.2	233.2 145.7	234.1 146.3	234.9 146.8	235.8 147.3	236.6 147.8	237.5 148.4	230.5 144.7	231.5 144.7	232.4 145.2	233.4 145.2	234.4 145.7	235.4 145.7	58
49	229.0 148.7	229.8 149.2	230.6 149.8	231.5 150.3	232.3 150.9	233.2 151.4	234.0 152.0	234.8 152.5	228.0 148.7	229.0 148.7	229.8 149.2	230.8 149.2	231.8 149.8	232.8 149.8	57
50	226.3 152.7	227.2 153.2	228.0 153.7	228.8 154.3	229.6 154.9	230.5 155.5	231.3 156.0	232.1 156.6	225.3 152.7	226.3 152.7	227.2 153.2	228.2 153.2	229.2 153.7	230.2 153.7	56
51	223.6 156.6	224.4 157.2	225.3 157.7	226.1 158.3	226.9 158.9	227.7 159.5	228.5 160.0	229.4 160.6	222.6 156.6	223.6 156.6					

Traverse Table.

(x)

281		282		283		284		285		286		287		288	
Course	Dist. Lat.	Dep.	Dist. Lat.	Dep.	Dist. Lat.	Dep.	Dist. Lat.	Dep.	Dist. Lat.	Dep.	Dist. Lat.	Dep.	Dist. Lat.	Dep.	Course
1	280.7	13.8	281.7	13.8	282.7	13.9	283.7	13.9	284.7	14.0	285.7	14.0	286.7	14.1	287.7
2	279.6	27.4	280.6	27.6	281.6	27.7	282.6	27.8	283.6	27.9	284.6	28.0	285.6	28.1	286.6
3	278.0	41.2	278.9	41.4	279.9	41.5	280.9	41.7	281.9	41.8	282.9	42.0	283.9	42.1	284.9
4	275.6	54.8	276.6	55.0	277.6	55.2	278.6	55.4	279.6	55.6	280.6	55.8	281.6	56.0	282.6
5	272.6	68.3	273.6	68.5	274.6	68.7	275.6	69.0	276.6	69.3	277.6	69.5	278.6	69.7	279.6
6	268.9	81.6	269.9	81.9	270.8	82.1	271.8	82.4	272.7	82.7	273.7	83.0	274.6	83.3	275.6
7	264.6	94.7	265.5	95.0	266.5	95.3	267.4	95.7	268.3	96.0	269.3	96.3	270.2	96.7	271.2
8	259.6	107.5	260.5	107.9	261.5	108.3	262.4	108.7	263.3	109.1	264.2	109.5	265.2	110.0	266.1
9	254.0	120.2	254.9	120.6	255.8	121.0	256.7	121.4	257.6	121.9	258.5	122.3	259.4	122.7	260.3
10	247.8	132.5	248.7	132.9	249.6	133.4	250.5	133.9	251.4	134.3	252.2	134.8	253.1	135.3	254.0
11	241.0	144.5	241.9	145.0	242.7	145.5	243.6	146.0	244.4	146.5	245.3	147.0	246.2	147.5	247.0
12	233.6	156.1	234.5	156.7	235.3	157.2	236.1	157.8	237.0	158.3	237.8	158.9	238.6	159.4	239.5
13	225.7	167.4	226.5	168.0	227.3	168.6	228.1	169.2	228.9	169.8	229.7	170.4	230.5	171.0	231.3
14	217.2	178.3	218.0	178.9	218.8	179.5	219.5	180.2	220.3	180.8	221.1	181.4	222.1	182.1	222.6
15	208.2	188.7	208.9	189.4	209.7	190.0	210.4	190.7	211.2	191.4	211.9	192.1	212.6	192.7	213.4
16	198.7	198.7	199.4	199.4	200.1	200.1	200.8	200.8	201.5	201.5	202.2	202.2	202.9	203.6	203.6
17	281.0	04.9	282.0	04.9	283.0	04.9	284.0	05.0	285.0	05.0	286.0	05.0	287.0	05.0	288.0
18	280.8	09.8	281.8	09.8	282.8	09.9	283.8	09.9	284.8	09.9	285.8	10.0	286.8	10.0	287.8
19	280.6	14.7	281.6	14.8	282.6	14.8	283.6	14.9	284.6	14.9	285.6	15.0	286.6	15.0	287.6
20	280.2	19.6	281.3	19.7	282.3	19.7	283.3	19.8	284.3	19.9	285.3	20.0	286.3	20.0	287.3
21	279.9	24.5	280.9	24.6	281.9	24.7	282.9	24.8	283.9	24.8	284.9	24.9	285.9	25.0	286.9
22	279.5	29.4	280.5	29.5	281.4	29.6	282.4	29.7	283.4	29.8	284.4	29.9	285.4	30.0	286.4
23	278.9	34.2	279.9	34.4	280.9	34.5	281.9	34.6	282.9	34.7	283.9	34.9	284.9	35.0	285.9
24	278.3	39.1	279.3	39.2	280.2	39.4	281.2	39.5	282.2	39.7	283.2	39.8	284.2	39.9	285.2
25	277.5	44.0	278.5	44.1	279.5	44.3	280.5	44.4	281.5	44.6	282.5	44.7	283.5	44.9	284.5
26	276.7	48.8	277.7	49.0	278.7	49.1	279.7	49.3	280.7	49.5	281.7	49.7	282.6	49.8	283.6
27	275.8	53.6	276.8	53.8	277.8	54.0	278.8	54.2	279.8	54.4	280.7	54.6	281.7	54.8	282.7
28	274.9	58.4	275.8	58.6	276.8	58.8	277.8	59.0	278.8	59.3	279.8	59.5	280.7	59.7	281.7
29	273.8	63.2	274.8	63.4	275.7	63.7	276.7	63.9	277.7	64.1	278.7	64.3	279.6	64.6	280.6
30	272.7	68.0	273.6	68.2	274.6	68.4	275.6	68.7	276.6	68.9	277.5	69.2	278.5	69.4	279.4
31	271.4	72.7	272.4	73.0	273.4	73.2	274.3	73.5	275.3	73.8	276.3	74.0	277.2	74.3	278.2
32	270.1	77.5	271.1	77.7	272.0	78.0	273.0	78.3	274.0	78.6	274.9	78.8	275.9	79.1	276.8
33	268.7	82.2	269.7	82.4	270.6	82.7	271.6	83.0	272.5	83.3	273.5	83.6	274.5	83.9	275.4
34	267.2	86.8	268.2	87.1	269.1	87.5	270.1	87.8	271.1	88.1	272.0	88.4	273.0	88.7	273.9
35	265.7	91.5	266.6	91.8	267.6	92.1	268.5	92.5	269.5	92.8	270.4	93.1	271.4	93.4	272.3
36	264.1	96.1	265.0	96.4	265.9	96.8	266.9	97.1	267.8	97.5	268.8	97.8	269.7	98.2	270.6
37	262.3	100.7	263.3	101.1	264.2	101.4	265.1	101.8	266.1	102.1	267.0	102.5	267.9	102.9	268.9
38	260.5	105.3	261.5	105.6	262.4	106.0	263.3	106.4	264.2	106.8	265.2	107.1	266.1	107.5	267.0
39	258.7	109.8	259.6	110.2	260.5	110.6	261.4	111.0	262.3	111.4	263.3	111.7	264.2	112.1	265.1
40	256.7	114.3	257.6	114.7	258.5	115.1	259.4	115.5	260.4	115.9	261.3	116.3	262.2	116.7	263.1
41	254.7	118.8	255.6	119.2	256.5	119.6	257.4	120.0	258.3	120.4	259.2	120.9	260.1	121.3	261.0
42	252.6	123.2	253.5	123.6	254.4	124.1	255.3	124.5	256.2	124.9	257.1	125.4	258.0	125.8	258.9
43	250.4	127.6	251.3	128.0	252.2	128.5	253.0	128.9	253.9	129.4	254.8	129.8	255.7	130.3	256.6
44	248.1	131.9	249.0	132.4	249.9	132.9	250.8	133.3	251.6	133.8	252.5	134.3	253.4	134.7	254.3
45	245.8	136.2	246.6	136.7	247.5	137.2	248.4	137.7	249.3	138.2	250.1	138.7	251.0	139.1	251.9
46	243.4	140.5	244.2	141.0	245.1	141.5	246.0	142.0	246.8	142.5	247.7	143.0	248.5	143.5	249.4
47	240.9	144.7	241.7	145.2	242.6	145.8	243.4	146.3	244.3	146.8	245.1	147.3	246.0	147.8	246.9
48	238.3	148.9	239.1	149.4	240.0	150.0	240.8	150.5	241.7	151.0	242.5	151.6	243.4	152.1	244.2
49	235.7	153.0	236.5	153.6	237.3	154.1	238.2	154.7	239.0	155.2	239.9	155.8	240.7	156.3	241.5
50	233.0	157.1	233.8	157.7	234.6	158.3	235.4	158.8	236.3	159.4	237.1	159.9	237.9	160.5	238.8
51	230.2	161.2	231.0	161.7	231.8	162.3	232.6	162.9	233.5	163.5	234.3	164.0	235.1	164.6	235.9
52	227.3	165.2	228.1	165.8	229.0	166.3	229.8	166.9	230.6	167.5	231.4	168.1	232.2	168.7	233.0
53	224.4	169.1	225.2	169.7	226.0	170.3	226.8	170.9	227.6	171.5	228.4	172.1	229.2	172.7	230.0
54	221.4	173.0	222.2	173.6	223.0	174.2	223.8	174.8	224.6	175.5	225.4	176.1	226.2	176.7	226.9
55	218.4	176.8	219.2	177.5	219.9	178.1	220.7	178.7	221.5	179.4	222.3	180.0	223.0	180.6	223.8
56	215.3	180.6	216.0	181.3	216.8	181.9	217.6	182.6	218.3	183.2	219.1	183.8	219.9	184.5	220.6
57	212.1	184.4	212.8	185.0	213.6	185.7	214.3	186.3	215.1	187.0	215.8	187.6	216.6	188.3	217.4
58	208.8	188.0	209.6	188.7	210.3	189.4	211.1	190.0	211.8	190.7	212.5	191.4	213.3	192.0	214.0
59	205.5	191.6	206.2	192.3	207.0	193.0	207.7	193.7	208.4	194.4	209.2	195.1	209.9	195.7	210.6
60	202.1	195.2	202.9	195.9	203.6	196.6	204.3	197.3	205.0	198.0	205.7	198.7	206.5	199.4	207.2
61	198.7	198.7	199.4	199.4	200.1	200.1	200.8	200.8	201.5	201.5	202.2	202.2	202.9	203.6	203.6

Traverse Table.

(x.)

Distance 289		290		291		292		293		294		295		296		Cm
Crn	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Crn
1	288.7	14.2	289.7	14.2	290.7	14.3	291.7	14.3	292.7	14.4	293.6	14.4	294.6	14.5	295.6	14.5
2	287.5	28.3	288.6	28.4	289.6	28.5	290.6	28.6	291.6	28.7	292.6	28.8	293.6	28.9	294.6	29.0
3	286.9	42.4	286.9	42.5	287.8	42.7	288.8	42.8	289.8	43.0	290.8	43.1	291.8	43.3	292.8	43.4
4	283.4	56.4	284.4	56.6	285.4	56.8	286.4	57.0	287.4	57.2	288.3	57.4	289.3	57.6	290.3	57.7
5	280.3	70.2	281.3	70.5	282.3	70.7	283.3	71.0	284.2	71.2	285.2	71.4	286.2	71.7	287.1	71.9
6	276.6	83.9	277.5	84.2	278.5	84.5	279.4	84.8	280.4	85.0	281.3	85.3	282.3	85.6	283.3	85.9
7	272.1	97.4	273.0	97.7	274.0	98.0	274.9	98.4	275.9	98.7	276.8	99.0	277.7	99.4	278.7	99.7
8	267.0	110.8	267.9	111.0	268.9	111.4	269.8	111.7	270.7	112.1	271.6	112.5	272.5	112.9	273.5	113.3
9	261.3	123.6	262.2	124.0	263.1	124.4	264.0	124.9	264.9	125.3	265.8	125.7	266.7	126.1	267.6	126.6
10	254.9	136.2	255.8	136.7	256.6	137.2	257.5	137.6	258.4	138.1	259.3	138.6	260.2	139.1	261.1	139.5
11	247.9	148.6	248.7	149.1	249.6	149.6	250.5	150.1	251.3	150.6	252.2	151.1	253.0	151.7	253.9	152.2
12	240.3	160.6	241.1	161.1	242.0	161.7	242.8	162.2	243.6	162.8	244.4	163.3	245.3	163.9	246.1	164.4
13	232.1	172.2	232.9	172.8	233.7	173.3	234.5	173.9	235.3	174.5	236.1	175.1	236.9	175.7	237.7	176.3
14	223.4	183.3	224.2	184.0	224.9	184.6	225.7	185.2	226.5	185.9	227.3	186.5	228.0	187.1	228.8	187.8
15	214.1	194.1	214.9	194.7	215.6	195.4	216.4	196.1	217.1	196.8	217.8	197.4	218.6	198.1	219.3	198.8
16	204.3	204.3	205.1	205.1	205.8	205.8	206.5	206.5	207.2	207.2	207.9	207.9	208.6	208.6	209.3	209.3
17	289.0	05.0	290.0	05.1	291.0	05.1	292.0	05.1	293.0	05.1	294.0	05.1	295.0	05.1	296.0	05.2
18	288.8	10.1	289.8	10.1	290.8	10.2	291.8	10.2	292.8	10.2	293.8	10.3	294.8	10.3	295.8	10.3
19	288.6	15.1	289.6	15.2	290.6	15.2	291.6	15.3	292.6	15.3	293.6	15.4	294.6	15.4	295.6	15.5
20	288.3	20.2	289.3	20.2	290.3	20.3	291.3	20.4	292.3	20.4	293.3	20.5	294.3	20.6	295.3	20.6
21	287.9	25.2	288.9	25.3	289.9	25.4	290.9	25.4	291.9	25.5	292.9	25.6	293.9	25.7	294.9	25.8
22	287.4	30.2	288.4	30.3	289.4	30.4	290.4	30.5	291.4	30.6	292.4	30.7	293.4	30.8	294.4	30.9
23	286.8	35.2	287.8	35.3	288.8	35.5	289.8	35.6	290.8	35.7	291.8	35.8	292.8	36.0	293.8	36.1
24	286.3	40.2	287.2	40.4	288.2	40.5	289.2	40.6	290.1	40.8	291.1	40.9	292.1	41.1	293.1	41.2
25	285.1	45.2	286.4	45.4	287.4	45.5	288.4	45.7	289.4	45.8	290.4	46.0	291.4	46.1	292.4	46.3
26	284.6	50.2	285.6	50.4	286.6	50.5	287.6	50.7	288.5	50.9	289.5	51.1	290.5	51.2	291.5	51.4
27	283.7	55.1	284.7	55.3	285.7	55.5	286.6	55.7	287.6	55.9	288.6	56.1	289.6	56.3	290.6	56.5
28	282.7	60.1	283.7	60.3	284.6	60.5	285.6	60.7	286.6	60.9	287.6	61.1	288.6	61.3	289.5	61.5
29	281.6	65.0	282.6	65.2	283.5	65.5	284.5	65.7	285.5	65.9	286.5	66.1	287.4	66.4	288.4	66.6
30	280.4	69.9	281.4	70.2	282.4	70.4	283.3	70.6	284.3	70.9	285.3	71.1	286.2	71.4	287.2	71.6
31	279.2	74.8	280.1	75.1	281.1	75.3	282.1	75.6	283.0	75.8	284.0	76.1	284.9	76.4	285.9	76.6
32	277.8	79.7	278.8	79.9	279.7	80.2	280.7	80.5	281.6	80.8	282.6	81.0	283.5	81.3	284.5	81.6
33	276.4	84.5	277.3	84.8	278.3	85.1	279.2	85.4	280.2	85.7	281.2	86.0	282.1	86.2	283.1	86.5
34	274.9	89.3	275.8	89.6	276.8	89.9	277.7	90.2	278.7	90.5	279.6	90.9	280.6	91.2	281.5	91.5
35	273.3	94.1	274.2	94.4	275.1	94.7	276.1	95.1	277.0	95.4	278.0	95.7	278.9	96.0	279.9	96.4
36	271.6	98.9	272.5	99.2	273.5	99.5	274.4	99.9	275.3	100.2	276.3	100.6	277.2	100.9	278.1	101.2
37	269.8	103.6	270.7	103.9	271.7	104.3	272.6	104.6	273.5	105.0	274.5	105.4	275.4	105.7	276.3	106.1
38	268.0	108.3	268.9	108.6	269.8	109.0	270.7	109.4	271.7	109.8	272.6	110.1	273.5	110.5	274.4	110.9
39	266.0	112.9	266.9	113.3	267.9	113.7	268.8	114.1	269.7	114.5	270.6	114.9	271.5	115.3	272.5	115.7
40	264.0	117.5	264.9	118.0	265.8	118.4	266.8	118.8	267.7	119.2	268.6	119.6	269.5	120.0	270.4	120.4
41	261.9	122.1	262.8	122.6	263.7	123.0	264.6	123.4	265.5	123.8	266.5	124.2	267.4	124.7	268.3	125.1
42	259.8	126.7	260.7	127.1	261.5	127.6	262.4	128.0	263.3	128.4	264.2	128.9	265.1	129.3	266.0	129.8
43	257.5	131.2	258.4	131.7	259.3	132.1	260.2	132.6	261.1	133.0	262.0	133.5	262.8	133.9	263.7	134.4
44	255.2	135.7	256.1	136.1	256.9	136.6	257.8	137.1	258.7	137.6	259.6	138.0	260.5	138.5	261.3	139.0
45	252.8	140.1	253.6	140.6	254.5	141.1	255.4	141.6	256.3	142.0	257.1	142.5	258.0	143.0	258.9	143.5
46	250.3	144.5	251.1	145.0	252.0	145.5	252.9	146.0	253.7	146.5	254.6	147.0	255.5	147.5	256.3	148.0
47	247.7	148.8	248.6	149.4	249.4	149.9	250.3	150.4	251.2	150.9	252.0	151.4	252.9	151.9	253.7	152.5
48	245.1	153.1	245.9	153.7	246.8	154.2	247.6	154.7	248.5	155.3	249.3	155.8	250.2	156.3	251.0	156.9
49	242.4	157.4	243.2	157.9	244.1	158.5	244.9	159.0	245.7	159.6	246.6	160.1	247.4	160.7	248.2	161.2
50	239.6	161.6	240.4	162.2	241.2	162.7	242.1	163.3	242.9	163.8	243.7	164.4	244.6	165.0	245.4	165.5
51	236.7	165.8	237.6	166.3	238.4	166.9	239.2	167.5	240.0	168.1	240.8	168.6	241.6	169.2	242.5	169.8
52	233.8	169.9	234.6	170.5	235.4	171.0	236.2	171.6	237.0	172.2	237.9	172.8	238.7	173.4	239.5	174.0
53	230.8	173.9	231.6	174.5	232.4	175.1	233.2	175.7	234.0	176.3	234.8	176.8	235.6	177.5	236.4	178.1
54	227.7	177.9	228.5	178.5	229.3	179.2	230.1	179.8	230.9	180.4	231.7	181.0	232.5	181.6	233.3	182.2
55	224.6	181.9	225.4	182.5	226.1	183.1	226.9	183.8	227.7	184.4	228.5	185.0	229.3	185.6	230.0	186.3
56	221.4	185.8	222.2	186.4	222.9	187.1	223.7	187.7	224.5	188.3	225.2	189.0	226.0	189.6	226.7	190.3
57	218.1	189.6	218.9	190.3	219.6	190.9	220.4	191.6	221.1	192.2	221.9	192.9	222.6	193.5	223.4	194.2
58	214.8	193.4	215.5	194.0	216.3	194.7	217.0	195.4	217.7	196.1	218.5	196.7	219.2	197.4	220.0	198.1
59	211.4	197.1	212.1	197.8	212.8	198.5	213.6	199.1	214.3	199.8	215.0	200.5	215.7	201.2	216.5	201.9
60	207.9	200.8	208.6	201.5	209.3	202.1	210.0	202.8	210.8	203.5	211.5	204.2	212.2	204.9	212.9	205.5
61	204.3	204.3	205.1	205.1	205.8	205.8	206.5	206.5	207.2	207.2	207.9	207.9	208.6	208.6	209.3	209.3

Meridional Parts.

(5)

Lat.	0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	
0'	0.00	60.00	120.02	180.08	240.19	300.38	360.66	421.05	481.57	542.23	603.07	0'
1	1.00	61.00	121.02	181.08	241.20	301.38	361.66	422.06	482.58	543.25	604.08	1
2	2.00	62.00	122.03	182.08	242.20	302.39	362.67	423.06	483.59	544.26	605.10	2
3	3.00	63.00	123.03	183.09	243.20	303.39	363.67	424.07	484.60	545.27	606.12	3
4	4.00	64.00	124.03	184.09	244.20	304.40	364.68	425.08	485.61	546.28	607.13	4
5	5.00	65.00	125.03	185.09	245.21	305.40	365.69	426.09	486.62	547.30	608.15	5
6	6.00	66.00	126.03	186.09	246.21	306.40	366.69	427.09	487.63	548.31	609.16	6
7	7.00	67.00	127.03	187.09	247.21	307.41	367.70	428.10	488.64	549.32	610.18	7
8	8.00	68.00	128.03	188.09	248.21	308.41	368.70	429.11	489.65	550.34	611.19	8
9	9.00	69.00	129.03	189.09	249.22	309.42	369.71	430.12	490.66	551.35	612.21	9
10	10.00	70.00	130.03	190.10	250.22	310.42	370.72	431.13	491.67	552.36	613.23	10
11	11.00	71.00	131.03	191.10	251.22	311.42	371.72	432.13	492.68	553.37	614.24	11
12	12.00	72.00	132.03	192.10	252.23	312.43	372.73	433.14	493.69	554.39	615.26	12
13	13.00	73.00	133.03	193.10	253.23	313.43	373.74	434.15	494.70	555.40	616.27	13
14	14.00	74.00	134.03	194.10	254.23	314.44	374.74	435.16	495.71	556.41	617.29	14
15	15.00	75.00	135.03	195.10	255.23	315.44	375.75	436.17	496.72	557.43	618.31	15
16	16.00	76.00	136.03	196.11	256.24	316.45	376.75	437.17	497.73	558.44	619.32	16
17	17.00	77.00	137.03	197.11	257.24	317.45	377.76	438.18	498.74	559.45	620.34	17
18	18.00	78.00	138.03	198.11	258.24	318.45	378.76	439.19	499.75	560.47	621.35	18
19	19.00	79.00	139.03	199.11	259.25	319.46	379.77	440.20	500.76	561.48	622.37	19
20	20.00	80.00	140.04	200.11	260.25	320.46	380.77	441.21	501.77	562.49	623.39	20
21	21.00	81.00	141.04	201.11	261.25	321.47	381.78	442.21	502.78	563.51	624.40	21
22	22.00	82.00	142.04	202.12	262.25	322.47	382.79	443.22	503.79	564.52	625.42	22
23	23.00	83.00	143.04	203.12	263.26	323.48	383.79	444.23	504.80	565.53	626.44	23
24	24.00	84.00	144.04	204.12	264.26	324.48	384.80	445.24	505.81	566.55	627.45	24
25	25.00	85.00	145.04	205.12	265.26	325.48	385.81	446.25	506.82	567.56	628.47	25
26	26.00	86.00	146.04	206.12	266.27	326.49	386.81	447.26	507.84	568.57	629.49	26
27	27.00	87.00	147.04	207.13	267.27	327.49	387.82	448.26	508.85	569.59	630.50	27
28	28.00	88.00	148.05	208.13	268.27	328.50	388.83	449.27	509.86	570.60	631.52	28
29	29.00	89.00	149.05	209.13	269.27	329.50	389.83	450.28	510.87	571.62	632.54	29
30	30.00	90.00	150.05	210.13	270.28	330.51	390.84	451.29	511.88	572.63	633.56	30
31	31.00	91.00	151.05	211.13	271.28	331.51	391.85	452.30	512.89	573.64	634.57	31
32	32.00	92.00	152.05	212.13	272.28	332.52	392.85	453.31	513.90	574.65	635.59	32
33	33.00	93.00	153.05	213.14	273.29	333.52	393.86	454.32	514.91	575.67	636.61	33
34	34.00	94.00	154.05	214.14	274.29	334.53	394.86	455.33	515.93	576.69	637.62	34
35	35.00	95.00	155.05	215.14	275.29	335.53	395.87	456.34	516.94	577.70	638.64	35
36	36.00	96.00	156.05	216.14	276.30	336.54	396.88	457.34	517.95	578.71	639.66	36
37	37.00	97.00	157.05	217.14	277.30	337.54	397.88	458.35	518.96	579.73	640.68	37
38	38.00	98.00	158.06	218.15	278.30	338.55	398.89	459.36	519.97	580.74	641.69	38
39	39.00	99.00	159.06	219.15	279.31	339.55	399.90	460.37	520.98	581.75	642.71	39
40	40.00	100.00	160.06	220.15	280.31	340.56	400.91	461.38	521.99	582.77	643.73	40
41	41.00	101.00	161.06	221.15	281.31	341.56	401.91	462.39	523.01	583.79	644.75	41
42	42.00	102.00	162.06	222.15	282.32	342.57	402.92	463.40	524.02	584.80	645.76	42
43	43.00	103.00	163.06	223.16	283.32	343.57	403.93	464.41	525.03	585.81	646.78	43
44	44.00	104.00	164.06	224.16	284.32	344.58	404.93	465.41	526.04	586.83	647.80	44
45	45.00	105.00	165.06	225.16	285.33	345.58	405.94	466.42	527.05	587.84	648.82	45
46	46.00	106.00	166.06	226.16	286.33	346.59	406.95	467.43	528.06	588.86	649.84	46
47	47.00	107.00	167.07	227.16	287.33	347.59	407.95	468.44	529.07	589.87	650.85	47
48	48.00	108.00	168.07	228.17	288.34	348.60	408.96	469.45	530.09	590.89	651.87	48
49	49.00	109.00	169.07	229.17	289.34	349.60	409.97	470.46	531.10	591.90	652.89	49
50	50.00	110.00	170.07	230.17	290.34	350.61	410.97	471.47	532.11	592.92	653.91	50
51	51.00	111.00	171.07	231.17	291.35	351.61	411.98	472.48	533.12	593.93	654.93	51
52	52.00	112.00	172.07	232.18	292.35	352.62	412.99	473.49	534.14	594.95	655.94	52
53	53.00	113.00	173.07	233.18	293.35	353.62	414.00	474.50	535.15	595.96	656.96	53
54	54.00	114.00	174.07	234.18	294.36	354.63	415.00	475.51	536.16	596.98	657.98	54
55	55.00	115.00	175.07	235.18	295.36	355.63	416.01	476.52	537.17	597.99	659.00	55
56	56.00	116.00	176.08	236.18	296.37	356.64	417.02	477.53	538.18	599.01	660.02	56
57	57.00	117.00	177.08	237.19	297.37	357.64	418.03	478.54	539.20	600.02	661.04	57
58	58.00	118.00	178.08	238.19	298.37	358.65	419.03	479.55	540.21	601.04	662.05	58
59	59.00	119.00	179.08	239.19	299.38	359.65	420.04	480.56	541.22	602.05	663.07	59
60	60.00	120.00	180.08	240.19	300.38	360.66	421.05	481.57	542.23	603.07	664.09	60
Lat.	0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	

Meridional Parts.											(y)
Lat.	11°	12°	13°	14°	15°	16°	17°	18°	19°	20°	
0	664.09	726.32	786.78	848.49	910.46	972.73	1035.30	1098.28	1161.49	1225.14	0
1	665.11	726.34	787.81	849.52	911.50	973.77	1036.35	1099.27	1162.54	1226.20	1
2	666.13	727.37	788.83	850.55	912.53	974.81	1037.40	1100.32	1163.60	1227.27	2
3	667.15	728.39	789.86	851.58	913.57	975.85	1038.44	1101.37	1164.66	1228.33	3
4	668.17	729.41	790.89	852.61	914.60	976.89	1039.49	1102.42	1165.72	1229.40	4
5	669.19	730.43	791.91	853.64	915.64	977.93	1040.53	1103.47	1166.78	1230.46	5
6	670.21	731.46	792.94	854.67	916.67	978.97	1041.58	1104.53	1167.83	1231.53	6
7	671.22	732.48	793.97	855.70	917.71	980.01	1042.63	1105.58	1168.89	1232.59	7
8	672.24	733.50	794.99	856.73	918.75	981.06	1043.67	1106.63	1169.95	1233.66	8
9	673.26	734.53	796.02	857.76	919.78	982.09	1044.72	1107.68	1171.01	1234.72	9
10	674.28	735.55	797.04	858.80	920.82	983.13	1045.77	1108.74	1172.07	1235.79	10
11	675.30	736.57	798.07	859.83	921.85	984.17	1046.81	1109.79	1173.13	1236.85	11
12	676.32	737.59	799.10	860.86	922.89	985.22	1047.86	1110.84	1174.19	1237.92	12
13	677.34	738.62	800.13	861.89	923.93	986.26	1048.91	1111.89	1175.24	1238.98	13
14	678.36	739.64	801.15	862.92	924.96	987.30	1049.95	1112.95	1176.30	1240.05	14
15	679.38	740.66	802.18	863.95	926.00	988.34	1051.00	1114.00	1177.36	1241.11	15
16	680.40	741.69	803.21	864.98	927.03	989.38	1052.05	1115.05	1178.42	1242.18	16
17	681.42	742.71	804.24	866.02	928.07	990.42	1053.09	1116.11	1179.48	1243.25	17
18	682.44	743.73	805.26	867.05	929.11	991.47	1054.14	1117.16	1180.54	1244.31	18
19	683.46	744.76	806.29	868.08	930.15	992.51	1055.19	1118.21	1181.60	1245.38	19
20	684.48	745.78	807.32	869.11	931.18	993.55	1056.24	1119.27	1182.66	1246.44	20
21	685.50	746.81	808.35	870.14	932.22	994.59	1057.28	1120.32	1183.72	1247.51	21
22	686.52	747.83	809.37	871.18	933.26	995.63	1058.33	1121.37	1184.78	1248.58	22
23	687.54	748.85	810.40	872.21	934.29	996.68	1059.38	1122.43	1185.84	1249.64	23
24	688.56	749.88	811.43	873.24	935.33	997.72	1060.43	1123.48	1186.90	1250.71	24
25	689.58	750.90	812.46	874.27	936.37	998.76	1061.48	1124.53	1187.96	1251.78	25
26	690.60	751.92	813.49	875.31	937.40	999.80	1062.52	1125.59	1189.02	1252.85	26
27	691.62	752.95	814.52	876.34	938.44	1000.85	1063.57	1126.64	1190.08	1253.91	27
28	692.64	753.97	815.54	877.37	939.48	1001.89	1064.62	1127.70	1191.14	1254.98	28
29	693.66	755.00	816.57	878.40	940.52	1002.93	1065.67	1128.75	1192.20	1256.05	29
30	694.68	756.02	817.60	879.44	941.56	1003.97	1066.72	1129.81	1193.26	1257.12	30
31	695.70	757.05	818.63	880.47	942.59	1005.02	1067.77	1130.86	1194.32	1258.18	31
32	696.72	758.07	819.66	881.50	943.63	1006.06	1068.81	1131.92	1195.39	1259.25	32
33	697.74	759.09	820.69	882.54	944.67	1007.10	1069.86	1132.97	1196.45	1260.32	33
34	698.76	760.12	821.71	883.57	945.71	1008.15	1070.91	1134.03	1197.51	1261.39	34
35	699.78	761.14	822.74	884.60	946.74	1009.19	1071.96	1135.08	1198.57	1262.45	35
36	700.80	762.17	823.77	885.64	947.78	1010.23	1073.01	1136.14	1199.63	1263.52	36
37	701.82	763.19	824.80	886.67	948.82	1011.28	1074.06	1137.19	1200.69	1264.59	37
38	702.85	764.22	825.83	887.70	949.86	1012.32	1075.11	1138.25	1201.75	1265.66	38
39	703.87	765.24	826.86	888.74	950.90	1013.36	1076.16	1139.30	1202.82	1266.73	39
40	704.89	766.27	827.89	889.77	951.94	1014.41	1077.21	1140.36	1203.88	1267.80	40
41	705.91	767.29	828.92	890.80	952.98	1015.45	1078.26	1141.41	1204.94	1268.87	41
42	706.93	768.32	829.95	891.84	954.01	1016.50	1079.31	1142.47	1206.00	1269.93	42
43	707.95	769.34	830.98	892.87	955.05	1017.54	1080.36	1143.52	1207.06	1271.00	43
44	708.97	770.37	832.00	893.91	956.09	1018.58	1081.41	1144.58	1208.13	1272.07	44
45	709.99	771.39	833.03	894.94	957.13	1019.63	1082.46	1145.64	1209.19	1273.14	45
46	711.02	772.42	834.06	895.97	958.17	1020.67	1083.51	1146.69	1210.25	1274.21	46
47	712.04	773.44	835.09	897.01	959.21	1021.72	1084.56	1147.75	1211.31	1275.28	47
48	713.06	774.47	836.12	898.04	960.25	1022.76	1085.61	1148.80	1212.38	1276.35	48
49	714.08	775.49	837.15	899.08	961.29	1023.81	1086.66	1149.86	1213.44	1277.42	49
50	715.10	776.52	838.18	900.11	962.33	1024.85	1087.71	1150.92	1214.50	1278.49	50
51	716.12	777.54	839.21	901.15	963.37	1025.90	1088.76	1151.97	1215.57	1279.56	51
52	717.15	778.57	840.24	902.18	964.41	1026.94	1089.81	1153.03	1216.63	1280.63	52
53	718.17	779.59	841.27	903.22	965.45	1027.99	1090.86	1154.09	1217.69	1281.70	53
54	719.19	780.62	842.30	904.25	966.49	1029.03	1091.91	1155.14	1218.76	1282.77	54
55	720.21	781.65	843.33	905.28	967.53	1030.08	1092.96	1156.20	1219.82	1283.84	55
56	721.23	782.67	844.36	906.32	968.57	1031.12	1094.01	1157.26	1220.88	1284.91	56
57	722.25	783.70	845.39	907.35	969.61	1032.17	1095.06	1158.32	1221.95	1285.98	57
58	723.28	784.73	846.42	908.39	970.65	1033.21	1096.11	1159.37	1223.01	1287.05	58
59	724.30	785.75	847.45	909.43	971.69	1034.26	1097.16	1160.43	1224.07	1288.12	59
60	725.32	786.78	848.49	910.46	972.73	1035.30	1098.22	1161.49	1225.14	1289.20	60
Lat.	11°	12°	13°	14°	15°	16°	17°	18°	19°	20°	

Meridional Parts.

(5)

Lat	21°	22°	23°	24°	25°	26°	27°	28°	29°	30°	
0	1289 20	1353.09	1418.63	1484.08	1549.99	1616.47	1683.52	1751.16	1819.44	1888.38	0
1	1290.27	1354.76	1419.72	1485.15	1551.10	1617.58	1684.84	1752.29	1820.81	1889.53	1
2	1291.34	1355.84	1420.80	1486.25	1552.20	1618.70	1685.76	1753.43	1821.72	1890.66	2
3	1292.41	1356.92	1421.89	1487.34	1553.31	1619.81	1686.84	1754.56	1822.87	1891.84	3
4	1293	1358 00	1422.98	1488 44	1554.41	1620 92	1688 01	1755.69	1823.91	1893 00	4
5	1294 55	1359 08	1424.06	1489.53	1555 51	1622.04	1689.13	1756 83	1825.00	1894.15	5
6	1295.63	1360.16	1425.15	1490.63	1556.62	1623.15	1690.25	1757 96	1826.30	1895 31	6
7	1296.70	1361.24	1426.24	1491.72	1557.72	1624.26	1691.38	1759.09	1827.44	1896.45	7
8	1297 77	1362 32	1427.32	1492.82	1558 83	1625 38	1692 50	1760 23	1828 59	1897 62	8
9	1298.84	1363.40	1428.41	1493 91	1559.93	1626.49	1693 61	1761.36	1829.73	1898.78	9
10	1299.91	1364 48	1429 50	1495 01	1561 04	1627.61	1694 75	1762 50	1830.82	1899.88	10
11	1300.99	1365 56	1430.59	1496.11	1562.14	1628 72	1695 87	1763.63	1832.02	1901.00	11
12	1302.06	1366 64	1431.68	1497.20	1563.25	1629.84	1697.00	1764.77	1833.17	1902.25	12
13	1303.13	1367.72	1432 76	1498.30	1564.35	1630 95	1698 12	1765 90	1834.32	1903.46	13
14	1304.20	1368.80	1433.85	1499.40	1565.46	1632 06	1699.25	1767 04	1835.46	1904.66	14
15	1305.28	1369.88	1434.94	1500.49	1566.56	1633.18	1700.37	1768 17	1836.61	1905.72	15
16	1306.35	1370 96	1436 03	1501 59	1567 67	1634.29	1701.50	1769.31	1837 75	1906.88	16
17	1307.42	1372.04	1437.12	1502 69	1568.77	1635.41	1702.62	1770.44	1838.90	1907.99	17
18	1308.50	1373 12	1438 21	1503.78	1569 88	1636 52	1703.75	1771.58	1840 05	1909.19	18
19	1309 57	1374.20	1439 29	1504.88	1570 99	1637.64	1704.87	1772.71	1841 19	1910 35	19
20	1310.64	1375 28	1440 38	1505.98	1572 09	1638.70	1706 00	1773.85	1842.34	1911.51	20
21	1311 72	1376.36	1441.47	1507.08	1573.20	1639.87	1707 12	1774.98	1843.49	1912 67	21
22	1312.79	1377.44	1442 56	1508.17	1574.31	1640.99	1708 25	1776.12	1844 64	1913.83	22
23	1313.86	1378.52	1443.65	1509 27	1575.41	1642.10	1709 37	1777.26	1845.78	1914 98	23
24	1314 94	1379.61	1444.74	1510.37	1576 52	1643.22	1710 50	1778 39	1846.93	1916.14	24
25	1316 01	1380.69	1445.83	1511.47	1577.63	1644 34	1711.63	1779.53	1848 08	1917 30	25
26	1317.08	1381.77	1446 92	1512.57	1578 73	1645.45	1712 75	1780.67	1849 22	1918 46	26
27	1318.16	1382 85	1448 01	1513.67	1579.84	1646 57	1713.88	1781.81	1850 37	1919 62	27
28	1319.23	1383 93	1449 10	1514.76	1580.95	1647.69	1715.01	1782.94	1851 52	1920.78	28
29	1320 31	1385 02	1450.19	1515 86	1582 06	1648 80	1716.14	1784.08	1852 67	1921 94	29
30	1321.38	1386.10	1451.28	1516.96	1583.17	1649 92	1717.26	1785.22	1853 81	1923.10	30
31	1322.45	1387.18	1452.37	1518.06	1584.27	1651 04	1718 38	1786.36	1854 97	1924 26	31
32	1323 53	1388 26	1453.46	1519 16	1585.38	1652.16	1719.52	1787.50	1856.12	1925.43	32
33	1324.60	1389.35	1454.55	1520.26	1586.49	1653 27	1720.65	1788 63	1857.27	1926 59	33
34	1325.68	1390 43	1455.64	1521 36	1587.60	1654 39	1721 77	1789 77	1858.42	1927 75	34
35	1326 76	1391.51	1456 73	1522 46	1588 71	1655 51	1722 90	1790 91	1859.57	1928 91	35
36	1327 83	1392 59	1457.83	1523 56	1589 82	1656.63	1724.03	1792 05	1860.72	1930 07	36
37	1328.90	1393.68	1458.92	1524 66	1590 92	1657.75	1725.16	1793.19	1861 87	1931 23	37
38	1329 98	1394.76	1460.01	1525 76	1592 03	1658 87	1726 29	1794 33	1863 02	1932.40	38
39	1331.06	1395 84	1461.10	1526 86	1593 14	1659.98	1727.42	1795.47	1864 17	1933.56	39
40	1332.13	1396 93	1462 19	1527.96	1594 25	1661.10	1728 54	1796.61	1865 31	1934.72	40
41	1333.21	1398 01	1463 28	1529 06	1595.36	1662.22	1729 67	1797.75	1866 47	1935 88	41
42	1334.29	1399.10	1464 38	1530.16	1596.47	1663.34	1730.80	1798.89	1867.62	1937 05	42
43	1335 37	1400.18	1465 47	1531 26	1597.58	1664.46	1731 93	1800.03	1868.77	1938 21	43
44	1336 44	1401 26	1466.56	1532 36	1598.69	1665.58	1733.06	1801 17	1869.92	1939.37	44
45	1337 52	1402.35	1467 65	1533.46	1599.80	1666.70	1734.19	1802 31	1871.08	1940.54	45
46	1338 60	1403 43	1468 75	1534 56	1600.91	1667 82	1735 32	1803.45	1872.23	1941.70	46
47	1339 67	1404.52	1469.84	1535 66	1602.02	1668 94	1736.45	1804 59	1873.38	1942 86	47
48	1340.75	1405.60	1470 93	1536 77	1603.13	1670 06	1737 58	1805.73	1874 53	1944 03	48
49	1341 83	1406 69	1472 02	1537 87	1604.24	1671.18	1738.71	1806 87	1875 69	1945 19	49
50	1342.91	1407.77	1473.12	1538.97	1605 35	1672.30	1739.84	1808 01	1876 84	1946 36	50
51	1343 98	1408 86	1474.21	1540.07	1606.46	1673.42	1740 98	1809 15	1877 98	1947 52	51
52	1345	1409 94	1475 30	1541.17	1607 58	1674 54	1742 11	1810.30	1879 14	1948 69	52
53	1346 14	1411.03	1476 40	1542.27	1608.69	1675 66	1743.24	1811.44	1880.29	1949 85	53
54	1347 22	1412.11	1477 49	1543.38	1609 80	1676 79	1744.37	1812.58	1881 45	1951.02	54
55	1348.29	1413 20	1478 59	1544 48	1610 91	1677 91	1745.50	1813 72	1882 60	1952.18	55
56	1349.37	1414.28	1479 68	1545 58	1612 02	1679.03	1746.63	1814.86	1883.76	1953.35	56
57	1350.45	1415.37	1480.77	1546 69	1613.13	1680.15	1747 76	1816.01	1884.91	1954 51	57
58	1351.53	1416.46	1481.87	1547.79	1614.25	1681 27	1748 90	1817.15	1886.07	1955 68	58
59	1352 61	1417.54	1482.96	1548 89	1615.36	1682 39	1750.03	1818 29	1887 22	1956 85	59
60	1353 69	1418 63	1484.06	1549 99	1616.47	1683 52	1751 16	1819 44	1888 38	1958 01	60
Lat.	21°	22°	23°	24°	25°	26°	27°	28°	29°	30°	

Meridional Parts.											(y)
Lat.	31°	32°	33°	34°	35°	36°	37°	38°	39°	40°	
0	1958.01	2028.38	2099.53	2171.48	2244.29	2317.99	2392.63	2468.26	2544.93	2622.69	0
1	1959.18	2029.56	2100.72	2172.69	2245.51	2319.2	2393.88	2469.53	2546.22	2624.00	1
2	1960.35	2030.74	2101.91	2173.89	2246.73	2320.46	2395.14	2470.80	2547.50	2625.30	2
3	1961.51	2031.92	2103.10	2175.10	2247.95	2321.70	2396.39	2472.07	2548.79	2626.61	3
4	1962.68	2033.10	2104.30	2176.31	2249.17	2322.93	2397.61	2473.34	2550.08	2627.91	4
5	1963.85	2034.28	2105.49	2177.51	2250.39	2324.17	2398.90	2474.61	2551.37	2629.22	5
6	1965.02	2035.46	2106.68	2178.72	2251.62	2325.41	2400.15	2475.88	2552.66	2630.53	6
7	1966.18	2036.64	2107.88	2179.93	2252.84	2326.65	2401.40	2477.15	2553.95	2631.84	7
8	1967.36	2037.82	2109.07	2181.14	2254.06	2327.89	2402.68	2478.42	2555.23	2633.14	8
9	1968.52	2039.00	2110.27	2182.35	2255.28	2329.12	2403.91	2479.69	2556.52	2634.45	9
10	1969.69	2040.18	2111.46	2183.55	2256.51	2330.36	2405.17	2480.97	2557.81	2635.76	10
11	1970.86	2041.37	2112.66	2184.76	2257.73	2331.60	2406.42	2482.24	2559.10	2637.07	11
12	1972.03	2042.55	2113.85	2185.97	2258.95	2332.84	2407.68	2483.51	2560.39	2638.38	12
13	1973.20	2043.73	2115.05	2187.18	2260.18	2334.08	2408.93	2484.78	2561.68	2639.69	13
14	1974.37	2044.91	2116.24	2188.39	2261.40	2335.32	2410.19	2486.06	2562.97	2641.00	14
15	1975.54	2046.10	2117.44	2189.60	2262.63	2336.56	2411.44	2487.33	2564.27	2642.31	15
16	1976.71	2047.28	2118.63	2190.81	2263.85	2337.80	2412.70	2488.60	2565.56	2643.62	16
17	1977.88	2048.46	2119.83	2192.02	2265.08	2339.04	2413.96	2489.88	2566.85	2644.93	17
18	1979.05	2049.64	2121.03	2193.23	2266.30	2340.28	2415.21	2491.15	2568.14	2646.24	18
19	1980.22	2050.83	2122.22	2194.44	2267.53	2341.52	2416.47	2492.43	2569.43	2647.55	19
20	1981.39	2052.01	2123.42	2195.65	2268.75	2342.76	2417.73	2493.70	2570.73	2648.86	20
21	1982.56	2053.19	2124.62	2196.86	2269.98	2344.00	2418.99	2494.97	2572.02	2650.17	21
22	1983.73	2054.38	2125.81	2198.07	2271.20	2345.25	2420.24	2496.25	2573.31	2651.49	22
23	1984.90	2055.56	2127.01	2199.29	2272.43	2346.49	2421.50	2497.52	2574.61	2652.80	23
24	1986.07	2056.75	2128.21	2200.50	2273.66	2347.73	2422.76	2498.80	2575.90	2654.11	24
25	1987.24	2057.93	2129.41	2201.71	2274.88	2348.97	2424.02	2500.08	2577.19	2655.43	25
26	1988.41	2059.11	2130.61	2202.92	2276.11	2350.21	2425.28	2501.35	2578.49	2656.74	26
27	1989.59	2060.30	2131.80	2204.14	2277.34	2351.46	2426.54	2502.62	2579.78	2658.05	27
28	1990.76	2061.49	2133.00	2205.35	2278.57	2352.70	2427.80	2503.91	2581.08	2659.37	28
29	1991.93	2062.67	2134.20	2206.56	2279.79	2353.95	2429.06	2505.18	2582.37	2660.68	29
30	1993.10	2063.86	2135.40	2207.78	2281.02	2355.19	2430.32	2506.46	2583.67	2662.00	30
31	1994.28	2065.04	2136.60	2208.99	2282.25	2356.43	2431.58	2507.74	2584.97	2663.31	31
32	1995.45	2066.23	2137.80	2210.20	2283.48	2357.68	2432.84	2509.02	2586.26	2664.63	32
33	1996.62	2067.41	2139.00	2211.42	2284.71	2358.92	2434.10	2510.30	2587.56	2665.94	33
34	1997.80	2068.60	2140.20	2212.63	2285.94	2360.17	2435.36	2511.58	2588.86	2667.26	34
35	1998.97	2069.79	2141.40	2213.84	2287.17	2361.41	2436.62	2512.86	2590.15	2668.58	35
36	2000.14	2070.97	2142.60	2215.06	2288.40	2362.66	2437.89	2514.14	2591.45	2669.89	36
37	2001.32	2072.16	2143.80	2216.27	2289.63	2363.90	2439.15	2515.41	2592.75	2671.21	37
38	2002.49	2073.35	2145.00	2217.49	2290.86	2365.15	2440.41	2516.69	2594.05	2672.53	38
39	2003.67	2074.54	2146.20	2218.70	2292.09	2366.40	2441.68	2517.97	2595.36	2673.85	39
40	2004.84	2075.72	2147.40	2219.92	2293.32	2367.64	2442.94	2519.25	2596.65	2675.16	40
41	2006.02	2076.91	2148.61	2221.14	2294.55	2368.89	2444.20	2520.54	2597.95	2676.48	41
42	2007.19	2078.10	2149.81	2222.35	2295.78	2370.14	2445.47	2521.83	2599.24	2677.80	42
43	2008.37	2079.29	2151.01	2223.57	2297.01	2371.38	2446.73	2523.10	2600.54	2679.12	43
44	2009.54	2080.48	2152.21	2224.79	2298.24	2372.63	2447.99	2524.38	2601.84	2680.44	44
45	2010.72	2081.67	2153.41	2226.00	2299.48	2373.88	2449.26	2525.68	2603.14	2681.76	45
46	2011.90	2082.86	2154.62	2227.22	2300.71	2375.13	2450.52	2526.95	2604.45	2683.08	46
47	2013.07	2084.04	2155.82	2228.44	2301.94	2376.38	2451.79	2528.23	2605.75	2684.40	47
48	2014.25	2085.23	2157.02	2229.66	2303.17	2377.63	2453.05	2529.51	2607.05	2685.72	48
49	2015.43	2086.42	2158.23	2230.87	2304.41	2378.87	2454.32	2530.79	2608.35	2687.04	49
50	2016.60	2087.61	2159.43	2232.09	2305.64	2380.12	2455.58	2532.08	2609.65	2688.36	50
51	2017.78	2088.80	2160.63	2233.31	2306.88	2381.37	2456.85	2533.36	2610.95	2689.69	51
52	2018.96	2089.99	2161.84	2234.53	2308.11	2382.62	2458.12	2534.65	2612.26	2691.01	52
53	2020.13	2091.19	2163.04	2235.75	2309.34	2383.87	2459.39	2535.93	2613.56	2692.33	53
54	2021.31	2092.38	2164.25	2236.97	2310.58	2385.12	2460.65	2537.22	2614.86	2693.65	54
55	2022.49	2093.57	2165.45	2238.19	2311.81	2386.37	2461.92	2538.50	2616.17	2694.98	55
56	2023.67	2094.76	2166.66	2239.41	2313.05	2387.62	2463.19	2539.79	2617.47	2696.30	56
57	2024.85	2095.95	2167.86	2240.63	2314.28	2388.88	2464.46	2541.07	2618.78	2697.63	57
58	2026.03	2097.14	2169.07	2241.85	2315.52	2390.13	2465.72	2542.36	2620.08	2698.95	58
59	2027.20	2098.33	2170.28	2243.07	2316.75	2391.38	2466.99	2543.64	2621.38	2700.27	59
60	2028.38	2099.53	2171.48	2244.29	2317.99	2392.63	2468.26	2544.93	2622.69	2701.60	60
Lat.	31°	32°	33°	34°	35°	36°	37°	38°	39°	40°	

Meridional Parts.

(7)

Lat.	41°	42°	43°	44°	45°	46°	47°	48°	49°	50°	
0	2701.60	2781.71	2863.10	2945.81	3029.94	3115.59	3202.71	3291.53	3382.08	3474.47	0
1	2702.92	2783.06	2864.46	2947.21	3031.35	3116.99	3204.18	3293.02	3384.11	3476.03	1
2	2704.25	2784.40	2865.83	2948.60	3032.77	3118.43	3205.65	3294.52	3385.52	3477.59	2
3	2705.57	2785.75	2867.20	2949.99	3034.18	3119.87	3207.12	3296.01	3386.96	3479.14	3
4	2706.90	2787.09	2868.57	2951.38	3035.60	3121.31	3208.58	3297.51	3388.41	3480.70	4
5	2708.23	2788.44	2869.94	2952.77	3037.02	3122.76	3210.05	3299.01	3389.87	3482.26	5
6	2709.55	2789.79	2871.31	2954.16	3038.43	3124.19	3211.52	3300.51	3391.24	3483.82	6
7	2710.88	2791.14	2872.68	2955.56	3039.85	3125.63	3212.99	3302.00	3392.77	3485.38	7
8	2712.21	2792.49	2874.05	2956.95	3041.27	3127.08	3214.46	3303.50	3394.29	3486.94	8
9	2713.54	2793.84	2875.42	2958.34	3042.68	3128.52	3215.93	3305.00	3395.82	3488.50	9
10	2714.86	2795.19	2876.79	2959.74	3044.10	3129.96	3217.40	3306.50	3397.35	3490.06	10
11	2716.19	2796.54	2878.16	2961.13	3045.52	3131.41	3218.87	3308.00	3398.88	3491.62	11
12	2717.52	2797.89	2879.53	2962.53	3046.94	3132.85	3220.34	3309.50	3400.41	3493.18	12
13	2718.85	2799.24	2880.90	2963.92	3048.36	3134.30	3221.82	3311.00	3401.94	3494.74	13
14	2720.18	2800.59	2882.28	2965.32	3049.78	3135.75	3223.29	3312.50	3403.47	3496.31	14
15	2721.51	2801.94	2883.65	2966.71	3051.20	3137.19	3224.76	3314.00	3405.00	3497.87	15
16	2722.84	2803.29	2885.02	2968.11	3052.62	3138.64	3226.23	3315.50	3406.54	3499.43	16
17	2724.17	2804.64	2886.39	2969.50	3054.04	3140.08	3227.71	3317.00	3408.07	3501.00	17
18	2725.50	2805.99	2887.77	2970.90	3055.46	3141.53	3229.18	3318.51	3409.60	3502.56	18
19	2726.83	2807.34	2889.14	2972.30	3056.88	3142.98	3230.66	3320.01	3411.14	3504.13	19
20	2728.16	2808.69	2890.52	2973.70	3058.31	3144.42	3232.13	3321.52	3412.67	3505.70	20
21	2729.50	2810.05	2891.89	2975.09	3059.73	3145.87	3233.61	3323.02	3414.20	3507.26	21
22	2730.83	2811.40	2893.27	2976.49	3061.15	3147.32	3235.08	3324.53	3415.74	3508.82	22
23	2732.16	2812.76	2894.64	2977.89	3062.58	3148.77	3236.56	3326.03	3417.28	3510.40	23
24	2733.50	2814.11	2896.02	2979.29	3064.00	3150.22	3238.04	3327.54	3418.81	3511.97	24
25	2734.83	2815.46	2897.40	2980.69	3065.42	3151.67	3239.52	3329.04	3420.35	3513.54	25
26	2736.16	2816.82	2898.77	2982.09	3066.85	3153.12	3240.99	3330.55	3421.89	3515.11	26
27	2737.50	2818.17	2900.15	2983.49	3068.27	3154.57	3242.47	3332.06	3423.43	3516.68	27
28	2738.83	2819.53	2901.53	2984.89	3069.70	3156.03	3243.95	3333.56	3424.96	3518.25	28
29	2740.17	2820.88	2902.91	2986.29	3071.13	3157.48	3245.43	3335.07	3426.50	3519.82	29
30	2741.50	2822.24	2904.28	2987.70	3072.55	3158.93	3246.91	3336.58	3428.04	3521.39	30
31	2742.84	2823.59	2905.66	2989.10	3073.98	3160.38	3248.39	3338.09	3429.58	3522.96	31
32	2744.17	2824.95	2907.04	2990.50	3075.41	3161.84	3249.87	3339.60	3431.12	3524.54	32
33	2745.51	2826.31	2908.42	2991.90	3076.84	3163.29	3251.35	3341.11	3432.66	3526.11	33
34	2746.84	2827.67	2909.80	2993.31	3078.26	3164.74	3252.84	3342.62	3434.20	3527.68	34
35	2748.18	2829.03	2911.18	2994.71	3079.69	3166.20	3254.32	3344.14	3435.75	3529.26	35
36	2749.52	2830.39	2912.56	2996.12	3081.12	3167.65	3255.80	3345.65	3437.29	3530.83	36
37	2750.85	2831.74	2913.94	2997.52	3082.55	3169.11	3257.28	3347.16	3438.83	3532.41	37
38	2752.19	2833.10	2915.32	2998.93	3083.98	3170.57	3258.77	3348.67	3440.38	3533.99	38
39	2753.53	2834.46	2916.71	3000.33	3085.41	3172.02	3260.25	3350.19	3441.92	3535.56	39
40	2754.87	2835.82	2918.09	3001.74	3086.84	3173.48	3261.74	3351.70	3443.47	3537.14	40
41	2756.21	2837.18	2919.47	3003.14	3088.27	3174.94	3263.22	3353.21	3445.01	3538.72	41
42	2757.55	2838.54	2920.85	3004.55	3089.70	3176.40	3264.71	3354.73	3446.56	3540.30	42
43	2758.89	2839.90	2922.24	3005.96	3091.14	3177.85	3266.19	3356.24	3448.10	3541.88	43
44	2760.23	2841.27	2923.62	3007.36	3092.57	3179.31	3267.68	3357.76	3449.65	3543.45	44
45	2761.57	2842.63	2925.01	3008.77	3094.00	3180.77	3269.17	3359.28	3451.20	3545.04	45
46	2762.91	2843.99	2926.39	3010.18	3095.43	3182.23	3270.65	3360.79	3452.75	3546.62	46
47	2764.25	2845.35	2927.78	3011.59	3096.87	3183.69	3272.14	3362.31	3454.29	3548.20	47
48	2765.59	2846.71	2929.16	3013.00	3098.30	3185.16	3273.63	3363.83	3455.84	3549.78	48
49	2766.93	2848.08	2930.55	3014.41	3099.74	3186.61	3275.12	3365.35	3457.39	3551.36	49
50	2768.27	2849.44	2931.93	3015.82	3101.17	3188.07	3276.61	3366.87	3458.94	3552.94	50
51	2769.62	2850.81	2933.32	3017.23	3102.60	3189.54	3278.10	3368.39	3460.49	3554.53	51
52	2770.96	2852.17	2934.71	3018.64	3104.04	3191.00	3279.59	3369.91	3462.04	3556.11	52
53	2772.30	2853.53	2936.09	3020.05	3105.48	3192.46	3281.08	3371.43	3463.60	3557.70	53
54	2773.64	2854.90	2937.48	3021.46	3106.92	3193.92	3282.57	3372.95	3465.15	3559.28	54
55	2774.98	2856.26	2938.87	3022.87	3108.35	3195.39	3284.06	3374.47	3466.70	3560.87	55
56	2776.33	2857.63	2940.26	3024.29	3109.79	3196.85	3285.56	3375.99	3468.26	3562.45	56
57	2777.68	2859.00	2941.65	3025.70	3111.23	3198.32	3287.05	3377.51	3469.81	3564.04	57
58	2779.02	2860.36	2943.04	3027.11	3112.67	3199.78	3288.54	3379.04	3471.36	3565.63	58
59	2780.37	2861.73	2944.42	3028.53	3114.11	3201.25	3290.04	3380.56	3472.92	3567.22	59
60	2781.71	2863.10	2945.81	3029.94	3115.55	3202.71	3291.53	3382.08	3474.47	3568.81	60
Lat.	41°	42°	43°	44°	45°	46°	47°	48°	49°	50°	

Meridional Parts.											(3)
Lat.	51°	52°	53°	54°	55°	56°	57°	58°	59°	60°	
0	3568.81	3685.19	3763.76	3864.64	3967.97	4073.90	4182.63	4294.19	4409.14	4527.37	0
1	3570.40	3686.82	3765.42	3866.34	3969.71	4075.69	4184.46	4296.19	4411.08	4529.37	1
2	3571.99	3688.44	3767.09	3868.04	3971.46	4077.48	4186.00	4298.07	4413.03	4531.37	2
3	3573.58	3690.07	3768.78	3869.74	3973.20	4079.27	4188.13	4299.96	4414.97	4533.37	3
4	3575.17	3691.70	3770.41	3871.33	3974.95	4081.06	4189.97	4301.85	4416.92	4535.38	4
5	3576.76	3693.32	3772.08	3873.15	3976.69	4082.86	4191.81	4303.74	4418.90	4537.38	5
6	3578.35	3694.95	3773.74	3874.86	3978.44	4084.65	4193.65	4305.64	4420.81	4539.39	6
7	3579.94	3696.58	3775.41	3876.56	3980.19	4086.44	4195.49	4307.53	4422.78	4541.39	7
8	3581.54	3698.21	3777.08	3878.27	3981.94	4088.24	4197.34	4309.42	4424.70	4543.40	8
9	3583.13	3699.84	3778.74	3879.98	3983.69	4090.03	4199.18	4311.32	4426.60	4545.41	9
10	3584.73	3701.47	3780.41	3881.69	3985.44	4091.84	4201.02	4313.21	4428.60	4547.42	10
11	3586.32	3703.10	3782.08	3883.39	3987.19	4093.62	4202.87	4315.11	4430.56	4549.43	11
12	3587.92	3704.73	3783.75	3885.10	3988.94	4095.42	4204.71	4317.01	4432.51	4551.44	12
13	3589.51	3706.36	3785.42	3886.81	3990.69	4097.22	4206.56	4318.91	4434.46	4553.45	13
14	3591.11	3707.99	3787.09	3888.52	3992.45	4099.02	4208.41	4320.80	4436.42	4555.47	14
15	3592.71	3709.63	3788.76	3890.23	3994.20	4100.82	4210.26	4322.70	4438.37	4557.48	15
16	3594.30	3711.26	3790.43	3891.95	3995.96	4102.62	4212.10	4324.61	4440.33	4559.50	16
17	3595.90	3712.90	3792.10	3893.66	3997.71	4104.42	4213.96	4326.51	4442.29	4561.52	17
18	3597.50	3714.53	3793.78	3895.37	3999.47	4106.22	4215.80	4328.41	4444.24	4563.53	18
19	3599.10	3716.17	3795.45	3897.09	4001.22	4108.02	4217.66	4330.31	4446.20	4565.55	19
20	3600.70	3717.80	3797.12	3898.80	4002.98	4109.82	4219.51	4332.22	4448.16	4567.57	20
21	3602.30	3719.44	3798.80	3900.52	4004.74	4111.63	4221.36	4334.12	4450.12	4569.59	21
22	3603.90	3721.08	3800.47	3902.24	4006.50	4113.44	4223.22	4336.03	4452.09	4571.61	22
23	3605.50	3722.71	3802.15	3903.95	4008.26	4115.24	4225.07	4337.94	4454.05	4573.64	23
24	3607.11	3724.35	3803.83	3905.67	4010.02	4117.06	4226.93	4339.84	4456.01	4575.66	24
25	3608.71	3725.99	3805.50	3907.39	4011.78	4118.85	4228.78	4341.75	4457.98	4577.69	25
26	3610.32	3727.63	3807.18	3909.10	4013.54	4120.64	4230.64	4343.68	4459.94	4579.71	26
27	3611.92	3729.27	3808.86	3910.82	4015.31	4122.47	4232.50	4345.57	4461.91	4581.74	27
28	3613.52	3730.91	3810.54	3912.54	4017.07	4124.28	4234.36	4347.48	4463.88	4583.77	28
29	3615.13	3732.56	3812.22	3914.26	4018.84	4126.09	4236.22	4349.40	4465.85	4585.80	29
30	3616.74	3734.20	3813.90	3915.99	4020.60	4127.89	4238.00	4351.31	4467.82	4587.83	30
31	3618.34	3735.84	3815.58	3917.71	4022.37	4129.72	4239.94	4353.23	4469.79	4589.86	31
32	3619.95	3737.48	3817.27	3919.44	4024.13	4131.53	4241.80	4355.14	4471.76	4591.89	32
33	3621.56	3739.13	3818.95	3921.16	4025.90	4133.34	4243.67	4357.06	4473.73	4593.92	33
34	3623.17	3740.77	3820.63	3922.88	4027.67	4135.16	4245.53	4358.97	4475.71	4595.96	34
35	3624.78	3742.42	3822.32	3924.61	4029.44	4136.97	4247.39	4360.89	4477.68	4598.00	35
36	3626.39	3744.06	3824.00	3926.33	4031.21	4138.79	4249.26	4362.81	4479.66	4600.03	36
37	3628.00	3745.71	3825.69	3928.06	4032.98	4140.61	4251.13	4364.73	4481.60	4602.07	37
38	3629.61	3747.36	3827.37	3929.79	4034.75	4142.42	4252.99	4366.66	4483.59	4604.11	38
39	3631.22	3749.01	3829.06	3931.51	4036.52	4144.24	4254.86	4368.57	4485.58	4606.16	39
40	3632.83	3750.66	3830.75	3933.24	4038.29	4146.06	4256.73	4370.50	4487.57	4608.19	40
41	3634.44	3752.30	3832.43	3934.97	4040.07	4147.88	4258.60	4372.42	4489.55	4610.23	41
42	3636.05	3753.95	3834.11	3936.70	4041.84	4149.70	4260.47	4374.34	4491.53	4612.27	42
43	3637.67	3755.61	3835.81	3938.43	4043.61	4151.52	4262.34	4376.27	4493.51	4614.32	43
44	3639.28	3757.26	3837.50	3940.16	4045.39	4153.34	4264.22	4378.20	4495.50	4616.37	44
45	3640.90	3758.91	3839.19	3941.89	4047.17	4155.17	4266.09	4380.12	4497.48	4618.41	45
46	3642.51	3760.56	3840.88	3943.63	4048.94	4157.00	4267.97	4382.05	4499.47	4620.45	46
47	3644.13	3762.21	3842.58	3945.36	4050.72	4158.82	4269.84	4383.98	4501.45	4622.50	47
48	3645.75	3763.87	3844.27	3947.10	4052.50	4160.65	4271.72	4385.91	4503.43	4624.55	48
49	3647.36	3765.52	3845.96	3948.83	4054.28	4162.47	4273.59	4387.84	4505.43	4626.60	49
50	3648.98	3767.18	3847.66	3950.57	4056.06	4164.30	4275.47	4389.77	4507.42	4628.65	50
51	3650.60	3768.83	3849.35	3952.31	4057.84	4166.13	4277.36	4391.70	4509.41	4630.71	51
52	3652.22	3770.49	3851.05	3954.04	4059.62	4167.96	4279.23	4393.64	4511.40	4632.76	52
53	3653.84	3772.15	3852.75	3955.78	4061.41	4169.79	4281.11	4395.57	4513.39	4634.81	53
54	3655.46	3773.80	3854.44	3957.52	4063.19	4171.62	4282.99	4397.51	4515.39	4636.87	54
55	3657.08	3775.46	3856.14	3959.26	4064.97	4173.45	4284.87	4399.44	4517.38	4638.93	55
56	3658.70	3777.12	3857.84	3961.00	4066.76	4175.28	4286.76	4401.38	4519.38	4640.98	56
57	3660.32	3778.78	3859.54	3962.74	4068.54	4177.12	4288.64	4403.32	4521.37	4643.04	57
58	3661.95	3780.44	3861.24	3964.48	4070.33	4178.95	4290.53	4405.26	4523.37	4645.10	58
59	3663.57	3782.10	3862.94	3966.22	4072.12	4180.78	4292.41	4407.20	4525.37	4647.16	59
60	3665.19	3783.76	3864.64	3967.97	4073.90	4182.62	4294.30	4409.14	4527.37	4649.23	60
Lat.	51°	52°	53°	54°	55°	56°	57°	58°	59°	60°	

Meridional Parts.

(5)

Lat.	61°	62°	63°	64°	65°	66°	67°	68°	69°	70°	
0	4649 23	4774.98	4904 94	5039.42	5178 81	5323.51	5474.01	5630 82	5794.56	5965.92	0
1	4651 29	4777.11	4907.14	5041 70	5181 18	5325.97	5476 57	5633 49	5797 35	5968 04	1
2	4653 35	4779.25	4909 35	5043 99	5183 54	5328 43	5479 13	5636 16	5800.14	5971 77	2
3	4655 42	4781 38	4911 55	5046 27	5185 91	5330 90	5481 69	5638 84	5802 84	5974 70	3
4	4657 49	4783 51	4913 76	5048 56	5188 29	5333 36	5484 26	5641 51	5805.74	5977.63	4
5	4659 55	4785.65	4915 97	5050 85	5190 66	5335 83	5486 11	5644 19	5808 11	5980 57	5
6	4661 02	4787.79	4918 18	5053 14	5193 03	5338 11	5489 40	5646 87	5811 34	5983 11	6
7	4663 09	4789 92	4920 39	5055 43	5195 41	5340 77	5491 97	5649 56	5814.15	5985 11	7
8	4665 79	4792 06	4922 60	5057 72	5197 79	5343 24	5494 54	5652 24	5816 95	5988 11	8
9	4667 83	4794.20	4924 81	5060 01	5200 17	5345 71	5497 11	5654 93	5819 76	5992 33	9
10	4669 91	4796 34	4927 03	5062 30	5202 55	5348 18	5499 69	5657 61	5822 57	5995 27	10
11	4671 98	4798 49	4929 24	5064 59	5204 93	5350 66	5502 27	5660 30	5825 39	5998 22	11
12	4674 06	4800 63	4931 46	5066 89	5207 31	5353 14	5504 85	5663 00	5828 11	6001 17	12
13	4676 13	4802 77	4933 68	5069 19	5209 70	5355 61	5507 11	5665 69	5831 02	6004 13	13
14	4678 21	4804 92	4935 90	5071 49	5212 11	5358 09	5510 11	5668 38	5833 84	6007 08	14
15	4680 29	4807 07	4938 12	5073 80	5214 47	5360 58	5512 60	5671 08	5836 66	6010 04	15
16	4682 37	4809 21	4940 34	5076 10	5216 88	5363 06	5515 18	5673 78	5839 48	6012 59	16
17	4684 45	4811 36	4942 57	5078 40	5219 25	5365 55	5517 77	5676 48	5842 31	6015 56	17
18	4686 53	4813 51	4944 79	5080 71	5221 64	5368 03	5520 11	5679 19	5845 13	6018 53	18
19	4688 61	4815 67	4947 02	5083 01	5224 04	5370 52	5522 56	5681 89	5847 96	6021 50	19
20	4690 70	4817 82	4949 24	5085 32	5226 43	5373 01	5525 55	5684 60	5850 79	6024 47	20
21	4692 78	4819 97	4951 47	5087 63	5228 83	5375 50	5528 14	5687 31	5853 63	6027 44	21
22	4694 87	4822 13	4953 70	5090 00	5231 23	5378 00	5530 74	5690 02	5856 47	6030 41	22
23	4696 96	4824 29	4955 94	5092 25	5233 63	5380 49	5533 34	5692 73	5859 31	6033 79	23
24	4699 05	4826 44	4958 17	5094 57	5236 11	5382 99	5535 94	5695 46	5862 15	6036 77	24
25	4701 14	4828 60	4960 40	5096 88	5238 43	5385 49	5538 55	5698 17	5864 99	6039 75	25
26	4703 23	4830 76	4962 64	5099 20	5240 84	5387 99	5541 15	5700 89	5867 84	6042 74	26
27	4705 32	4832 93	4964 88	5101 52	5243 24	5390 49	5543 76	5703 61	5870 69	6045 73	27
28	4707 41	4835 09	4967 11	5103 84	5245 65	5392 99	5546 37	5706 33	5873 54	6048 72	28
29	4709 51	4837 25	4969 35	5106 16	5248 06	5395 50	5548 98	5709 06	5876 39	6051 71	29
30	4711 60	4839 42	4971 59	5108 48	5250 47	5398 01	5551 59	5711 78	5879 24	6054 70	30
31	4713 70	4841 58	4973 83	5110 80	5252 88	5400 52	5554 20	5714 51	5882 11	6057 70	31
32	4715 79	4843 75	4976 08	5113 13	5255 30	5403 03	5556 82	5717 25	5885 00	6060 70	32
33	4717 89	4845 92	4978 32	5115 45	5257 71	5405 54	5559 44	5719 98	5887 82	6063 71	33
34	4719 99	4848 09	4980 57	5117 78	5260 13	5408 05	5562 06	5722 71	5890 68	6066 71	34
35	4722 09	4850 26	4982 82	5120 11	5262 55	5410 57	5564 68	5725 45	5893 55	6069 71	35
36	4724 19	4852 43	4985 06	5122 44	5264 97	5413 11	5567 30	5728 19	5896 41	6072 72	36
37	4726 30	4854 61	4987 31	5124 77	5267 39	5415 60	5569 93	5730 93	5899 28	6075 73	37
38	4728 40	4856 78	4989 56	5127 11	5269 81	5418 12	5572 55	5733 08	5902 15	6078 75	38
39	4730 51	4858 96	4991 82	5129 44	5272 23	5420 64	5575 18	5736 42	5905 03	6081 76	39
40	4732 61	4861 13	4994 07	5131 78	5274 66	5423 17	5577 81	5739 17	5907 90	6084 78	40
41	4734 72	4863 31	4996 32	5134 11	5277 09	5425 69	5580 44	5741 92	5910 78	6087 81	41
42	4736 83	4865 49	4998 58	5136 45	5279 52	5428 22	5583 08	5744 67	5913 67	6090 83	42
43	4738 94	4867 67	5000 84	5138 79	5281 95	5430 75	5585 71	5747 43	5916 55	6093 85	43
44	4741 05	4869 86	5003 10	5141 14	5284 38	5433 28	5588 35	5750 18	5919 44	6096 89	44
45	4743 16	4872 04	5005 36	5143 48	5286 82	5435 81	5590 99	5752 94	5922 33	6099 92	45
46	4745 28	4874 22	5007 62	5145 83	5289 25	5438 35	5593 64	5755 70	5925 22	6102 95	46
47	4747 39	4876 41	5009 88	5148 17	5291 69	5440 88	5596 28	5758 46	5928 11	6105 99	47
48	4749 51	4878 60	5012 15	5150 52	5294 13	5443 42	5598 93	5761 23	5931 00	6109 03	48
49	4751 63	4880 79	5014 41	5152 87	5296 57	5445 96	5601 57	5763 99	5933 90	6112 07	49
50	4753 74	4882 98	5016 68	5155 22	5299 01	5448 50	5604 22	5766 76	5936 80	6115 12	50
51	4755 86	4885 17	5018 94	5157 57	5301 45	5451 05	5606 87	5769 53	5939 70	6118 16	51
52	4757 98	4887 36	5021 21	5159 93	5303 90	5453 59	5609 53	5772 31	5942 61	6121 21	52
53	4760 10	4889 55	5023 48	5162 28	5306 34	5456 14	5612 18	5775 08	5945 51	6124 26	53
54	4762 23	4891 75	5025 76	5164 64	5308 79	5458 68	5614 84	5777 86	5948 42	6127 32	54
55	4764 35	4893 94	5028 03	5167 00	5311 24	5461 23	5617 50	5780 64	5951 33	6130 38	55
56	4766 47	4896 14	5030 30	5169 36	5313 69	5463 78	5620 16	5783 42	5954 24	6133 44	56
57	4768 60	4898 34	5032 58	5171 72	5316 15	5466 34	5622 82	5786 20	5957 16	6136 50	57
58	4770 73	4900 54	5034 86	5174 08	5318 60	5468 89	5625 49	5788 98	5960 08	6139 56	58
59	4772 86	4902 74	5037 14	5176 44	5321 06	5471 45	5628 15	5791 77	5963 00	6142 63	59
60	4774 98	4904 94	5039 42	5178 81	5323 51	5474 01	5630 82	5794 56	5965 92	6145 70	60
Lat.	61°	62°	63°	64°	65°	66°	67°	68°	69°	70°	

Meridional Parts.

(v)

Lat.	71°	72°	73°	74°	75°	76°	77°	78°	79°	80°	
0	6145.70	6334.84	6534.42	6745.74	6970.34	7210.07	7467.21	7744.57	8045.71	8375.20	0
1	6148.77	6338.08	6537.85	6749.37	6974.20	7214.20	7471.66	7749.38	8050.95	8380.96	1
2	6151.85	6341.32	6541.27	6753.02	6978.07	7218.35	7476.11	7754.20	8056.20	8386.73	2
3	6154.93	6344.56	6544.70	6756.64	6981.95	7222.49	7480.67	7759.02	8061.40	8392.62	3
4	6158.01	6347.81	6548.13	6760.28	6985.63	7226.64	7485.03	7763.86	8066.73	8398.31	4
5	6161.09	6351.06	6551.57	6763.93	6989.71	7230.80	7489.60	7768.70	8072.01	8404.11	5
6	6164.18	6354.31	6555.01	6767.58	6993.60	7234.96	7493.98	7773.66	8077.20	8409.92	6
7	6167.27	6357.56	6558.45	6771.23	6997.49	7239.12	7498.48	7778.40	8082.58	8415.74	7
8	6170.35	6360.82	6561.89	6774.89	7001.38	7243.29	7502.95	7783.26	8087.88	8421.57	8
9	6173.43	6364.08	6565.34	6778.55	7005.28	7247.47	7507.44	7788.12	8093.19	8427.42	9
10	6176.55	6367.35	6568.79	6782.21	7009.19	7251.65	7511.94	7793.00	8098.61	8433.27	10
11	6179.65	6370.61	6572.25	6785.88	7013.10	7255.83	7516.45	7797.88	8103.81	8439.13	11
12	6182.75	6373.88	6575.70	6789.55	7017.01	7260.02	7520.96	7802.78	8109.17	8445.00	12
13	6185.85	6377.16	6579.16	6793.23	7020.93	7264.22	7525.47	7807.66	8114.51	8450.88	13
14	6188.96	6380.43	6582.63	6796.90	7024.85	7268.42	7530.00	7812.56	8119.80	8456.77	14
15	6192.07	6383.71	6586.10	6800.58	7028.77	7272.62	7534.63	7817.46	8125.22	8462.67	15
16	6195.18	6386.99	6589.57	6804.27	7032.70	7276.83	7539.08	7822.38	8130.58	8468.58	16
17	6198.30	6390.26	6593.05	6807.96	7036.64	7281.05	7543.40	7827.30	8135.95	8474.50	17
18	6201.42	6393.57	6596.52	6811.65	7040.58	7285.27	7548.15	7832.23	8141.33	8480.43	18
19	6204.54	6396.86	6600.01	6815.35	7044.52	7289.49	7552.70	7837.16	8146.72	8486.37	19
20	6207.66	6400.15	6603.49	6819.05	7048.47	7293.72	7557.26	7842.10	8152.12	8492.32	20
21	6210.78	6403.44	6606.98	6822.75	7052.42	7297.96	7561.82	7847.05	8157.53	8498.28	21
22	6213.91	6406.74	6610.47	6826.46	7056.37	7302.20	7566.39	7852.01	8162.81	8504.25	22
23	6217.04	6410.05	6613.96	6830.18	7060.33	7306.44	7570.96	7856.97	8168.37	8510.23	23
24	6220.18	6413.35	6617.46	6833.89	7064.30	7310.69	7575.64	7861.94	8173.80	8516.22	24
25	6223.31	6416.66	6620.97	6837.61	7068.27	7314.95	7580.13	7866.91	8179.24	8522.22	25
26	6226.45	6419.97	6624.47	6841.34	7072.24	7319.21	7584.72	7871.90	8184.69	8528.23	26
27	6229.59	6423.29	6627.98	6845.07	7076.22	7323.47	7589.32	7876.89	8190.01	8534.26	27
28	6232.72	6426.61	6631.49	6848.80	7080.20	7327.74	7593.93	7881.89	8195.61	8540.29	28
29	6235.85	6429.93	6635.01	6852.53	7084.19	7332.02	7598.54	7886.89	8201.01	8546.33	29
30	6239.04	6433.25	6638.53	6856.27	7088.18	7336.30	7603.16	7891.91	8206.57	8552.38	30
31	6242.19	6436.58	6642.05	6860.02	7092.18	7340.56	7607.78	7896.93	8212.06	8558.45	31
32	6245.35	6439.91	6645.58	6863.77	7096.18	7344.88	7612.41	7901.95	8217.56	8564.52	32
33	6248.50	6443.24	6649.11	6867.52	7100.18	7349.18	7617.04	7906.98	8223.07	8570.61	33
34	6251.67	6446.58	6652.64	6871.27	7104.19	7353.48	7621.68	7912.03	8228.59	8576.70	34
35	6254.83	6449.92	6656.18	6875.03	7108.21	7357.79	7626.33	7917.08	8234.12	8582.81	35
36	6258.00	6453.26	6659.72	6878.80	7112.23	7362.10	7630.99	7922.13	8239.66	8588.93	36
37	6261.17	6456.61	6663.26	6882.56	7116.25	7366.42	7635.65	7927.19	8245.20	8595.06	37
38	6264.34	6459.95	6666.81	6886.34	7120.28	7370.74	7640.31	7932.26	8250.75	8601.20	38
39	6267.51	6463.31	6670.36	6890.11	7124.31	7375.07	7644.98	7937.34	8256.31	8607.36	39
40	6270.69	6466.66	6673.91	6893.89	7128.35	7379.40	7649.66	7942.43	8261.88	8613.51	40
41	6273.87	6470.02	6677.47	6897.68	7132.39	7383.74	7654.35	7947.52	8267.46	8619.68	41
42	6277.05	6473.38	6681.03	6901.46	7136.43	7388.08	7659.04	7952.62	8273.05	8625.86	42
43	6280.24	6476.74	6684.59	6905.25	7140.48	7392.43	7663.74	7957.72	8278.65	8632.05	43
44	6283.43	6480.11	6688.16	6909.05	7144.54	7396.79	7668.44	7962.84	8284.25	8638.26	44
45	6286.62	6483.48	6691.73	6912.85	7148.60	7401.15	7673.15	7967.96	8289.87	8644.47	45
46	6289.81	6486.86	6695.31	6916.65	7152.67	7405.51	7677.87	7973.09	8295.49	8650.70	46
47	6293.01	6490.23	6698.89	6920.46	7156.74	7409.88	7682.59	7978.23	8301.12	8656.94	47
48	6296.21	6493.61	6702.47	6924.27	7160.81	7414.26	7687.32	7983.37	8306.77	8663.19	48
49	6299.42	6497.00	6706.06	6928.09	7164.89	7418.64	7692.06	7988.52	8312.42	8669.44	49
50	6302.62	6500.38	6709.65	6931.91	7168.97	7423.03	7696.79	7993.68	8318.08	8675.72	50
51	6305.83	6503.77	6713.24	6935.73	7173.08	7427.42	7701.54	7998.85	8323.75	8682.00	51
52	6309.04	6507.17	6716.84	6939.56	7177.16	7431.82	7706.30	8004.03	8329.43	8688.29	52
53	6312.26	6510.56	6720.44	6943.40	7181.25	7436.22	7711.06	8009.21	8335.12	8694.59	53
54	6315.48	6513.96	6724.04	6947.23	7185.35	7440.63	7715.83	8014.40	8340.82	8700.92	54
55	6318.70	6517.36	6727.65	6951.07	7189.48	7445.05	7720.60	8019.60	8346.52	8707.28	55
56	6321.92	6520.77	6731.26	6954.92	7193.57	7449.47	7725.38	8024.81	8352.24	8713.59	56
57	6325.14	6524.18	6734.88	6958.77	7197.69	7453.89	7730.17	8030.02	8357.96	8719.94	57
58	6328.37	6527.59	6738.50	6962.62	7201.81	7458.33	7734.96	8035.24	8363.70	8726.30	58
59	6331.61	6531.01	6742.12	6966.48	7205.94	7462.78	7739.76	8040.47	8369.44	8732.68	59
60	6334.84	6534.42	6745.74	6970.34	7210.07	7467.21	7744.57	8045.71	8375.20	8739.06	60
Lat.	71°	72°	73°	74°	75°	76°	77°	78°	79°	80°	

Meridional Parts.										(7)
Lat.	81°	82°	83°	84°	85°	86°	87°	88°	89°	
0	8739.66	9146.66	9606.82	10136.89	10764.69	11632.82	12822.11	15016.43	18299.66	0
1	8745.46	9152.46	9614.03	10146.46	10776.11	11646.88	12841.27	15045.20	18357.34	1
2	8751.87	9158.88	9622.27	10156.07	10787.63	11661.31	12860.54	15074.22	18416.11	2
3	8758.29	9167.06	9630.52	10165.70	10799.22	11676.80	12879.91	14003.41	18475.90	3
4	8764.73	9174.32	9638.77	10175.37	10810.82	11690.34	12899.31	14032.00	18536.78	4
5	8771.17	9181.57	9647.09	10185.08	10822.47	11694.95	12919.31	14062.77	18598.69	5
6	8777.63	9188.84	9655.40	10194.77	10834.16	11699.62	12939.31	14092.77	18661.78	6
7	8784.10	9196.13	9663.74	10204.51	10845.80	11693.36	12959.31	14123.09	18726.04	7
8	8790.58	9203.42	9672.09	10214.28	10857.65	11697.16	12979.31	14153.66	18791.63	8
9	8797.08	9210.74	9680.47	10224.08	10869.46	11696.02	12999.31	14184.49	18858.29	9
10	8803.58	9218.07	9688.86	10233.90	10881.31	11697.94	13019.31	14215.61	18926.36	10
11	8810.10	9225.41	9697.28	10243.75	10893.20	11699.83	13039.31	14247.01	18995.81	11
12	8816.63	9232.77	9705.71	10253.64	10905.13	11700.99	13059.31	14278.70	19066.70	12
13	8823.17	9240.15	9714.17	10263.54	10917.10	11724.11	13079.31	14310.68	19139.09	13
14	8829.72	9247.54	9722.64	10273.47	10929.11	11736.30	13099.31	14342.97	19213.03	14
15	8836.30	9254.95	9731.14	10283.43	10941.17	11754.56	13119.31	14375.56	19288.57	15
16	8842.88	9262.37	9739.66	10293.46	10953.26	11769.88	13142.26	14408.46	19365.83	16
17	8849.47	9269.81	9748.20	10303.47	10965.40	11785.27	13165.30	14441.58	19444.87	17
18	8856.07	9277.27	9756.76	10313.53	10977.59	11800.73	13188.41	14475.11	19525.77	18
19	8862.69	9284.74	9765.34	10323.61	10989.81	11816.26	13205.75	14509.10	19608.63	19
20	8869.32	9292.23	9773.94	10333.72	11002.08	11831.87	13227.18	14543.31	19693.49	20
21	8875.96	9299.73	9782.57	10343.86	11014.40	11847.54	13248.74	14577.77	19780.53	21
22	8882.62	9307.25	9791.21	10354.03	11026.75	11863.28	13270.44	14612.78	19869.83	22
23	8889.29	9314.79	9799.88	10364.24	11039.15	11879.10	13292.27	14648.04	19961.51	23
24	8895.96	9322.34	9808.57	10374.47	11051.60	11894.99	13314.26	14683.67	20055.70	24
25	8902.66	9329.91	9817.28	10384.73	11064.09	11910.95	13336.36	14719.67	20152.55	25
26	8909.37	9337.49	9826.02	10395.03	11076.63	11926.90	13358.62	14756.06	20252.20	26
27	8916.09	9345.10	9834.77	10405.36	11089.21	11943.10	13381.02	14792.83	20354.83	27
28	8922.82	9352.72	9843.55	10415.71	11101.84	11959.29	13403.58	14830.00	20460.62	28
29	8929.57	9360.35	9852.35	10426.09	11114.52	11975.65	13426.27	14867.57	20569.76	29
30	8936.33	9368.00	9861.17	10436.51	11127.24	11991.89	13449.19	14905.56	20682.49	30
31	8943.10	9375.67	9870.02	10446.98	11140.01	12008.31	13472.13	14943.98	20799.03	31
32	8949.88	9383.36	9878.88	10457.44	11152.82	12024.81	13495.28	14982.83	20919.67	32
33	8956.68	9391.06	9887.77	10467.95	11165.69	12041.39	13518.60	15022.12	21044.69	33
34	8963.49	9398.79	9896.69	10478.50	11178.60	12058.00	13542.07	15061.87	21174.44	34
35	8970.32	9406.53	9905.63	10489.08	11191.56	12074.79	13565.70	15102.08	21309.27	35
36	8977.16	9414.28	9914.59	10499.69	11204.67	12091.60	13589.50	15142.77	21449.61	36
37	8984.01	9422.06	9923.57	10510.33	11217.83	12108.51	13613.47	15183.94	21595.92	37
38	8990.87	9429.84	9932.57	10521.01	11230.74	12125.49	13637.60	15225.62	21748.73	38
39	8997.78	9437.65	9941.60	10531.71	11243.90	12142.57	13661.90	15267.80	21908.66	39
40	9004.65	9445.48	9950.66	10542.45	11257.11	12159.72	13686.37	15310.51	22076.39	40
41	9011.55	9453.32	9959.73	10553.23	11270.37	12176.96	13711.02	15353.76	22252.72	41
42	9018.47	9461.18	9968.83	10564.04	11283.68	12194.39	13735.85	15397.56	22438.50	42
43	9025.41	9469.06	9977.96	10574.88	11297.04	12211.71	13760.91	15441.81	22633.09	43
44	9032.36	9476.96	9987.11	10585.76	11310.46	12229.21	13786.05	15486.66	22836.43	44
45	9039.32	9484.87	9996.28	10596.67	11323.93	12246.81	13811.31	15532.40	23048.37	45
46	9046.29	9492.81	10005.48	10607.62	11337.45	12264.49	13837.00	15578.55	23269.55	46
47	9053.28	9500.76	10014.70	10618.60	11351.02	12282.26	13863.25	15625.32	23499.31	47
48	9060.29	9508.73	10023.95	10629.61	11364.65	12300.13	13889.71	15672.75	23738.48	48
49	9067.31	9516.71	10033.22	10640.67	11378.33	12318.09	13916.41	15720.31	23986.60	49
50	9074.34	9524.72	10042.52	10651.76	11392.06	12336.15	13943.20	15768.59	24245.26	50
51	9081.38	9532.74	10051.84	10662.87	11405.85	12354.30	13970.27	15817.06	24515.16	51
52	9088.43	9540.79	10061.19	10674.03	11419.70	12372.54	13997.52	15866.25	24796.39	52
53	9095.52	9548.86	10070.56	10685.22	11433.60	12390.89	14024.91	15916.19	25089.42	53
54	9102.61	9556.93	10079.96	10696.46	11447.56	12409.33	14052.57	15967.89	25394.35	54
55	9109.72	9565.03	10089.38	10707.72	11461.58	12427.87	14080.37	16020.31	25712.12	55
56	9116.84	9573.15	10098.83	10719.03	11475.65	12446.51	14108.31	16073.68	26043.23	56
57	9123.97	9581.29	10108.30	10730.37	11489.78	12465.26	14136.31	16127.82	26388.21	57
58	9131.12	9589.45	10117.81	10741.76	11503.97	12484.10	14164.36	16182.71	26747.10	58
59	9138.28	9597.62	10127.33	10753.17	11518.21	12503.05	14192.44	16238.74	27120.96	59
60	9145.46	9605.82	10136.89	10764.62	11532.52	12522.11	14220.56	16295.84	Inf.	60
Lat.	81°	82°	83°	84°	85°	86°	87°	88°	89°	

(z) Bearing Amplitude and Time Amplitude at Rising and Setting of the Sun.

Declination.													
Lat.	1°		2°		3°		4°		5°		6°		
	Bearing Ampl.	Time Ampl.	Bearing Ampl.	Time Ampl.	Bear. Ampl.	Time Ampl.	Bear. Ampl.	Time Ampl.	Bear. Ampl.	Time Ampl.	Bear. Ampl.	Time Ampl.	
°	°	h. m.	°	h. m.	°	h. m.	°	h. m.	°	h. m.	°	h. m.	
1	1.0	0.0	2.0	0.0	3.0	0.0	4.0	0.0	5.0	0.0	6.0	0.0	
2	1.0	0.0	2.0	0.0	3.0	0.0	4.0	0.1	5.0	0.1	6.0	0.1	
3	1.0	0.0	2.0	0.0	3.0	0.1	4.0	0.1	5.0	0.1	6.0	0.1	
4	1.0	0.0	2.0	0.1	3.0	0.1	4.1	0.1	5.1	0.1	6.1	0.2	
5	1.0	0.0	2.0	0.1	3.0	0.1	4.1	0.1	5.1	0.2	6.1	0.2	
6	1.0	0.0	2.0	0.1	3.1	0.1	4.1	0.2	5.1	0.2	6.2	0.3	
7	1.0	0.0	2.1	0.1	3.1	0.1	4.2	0.2	5.2	0.2	6.3	0.3	
8	1.0	0.1	2.1	0.1	3.2	0.2	4.3	0.2	5.3	0.3	6.4	0.3	
9	1.0	0.1	2.1	0.1	3.2	0.2	4.3	0.3	5.3	0.3	6.5	0.4	
10	1.1	0.1	2.2	0.1	3.2	0.2	4.4	0.3	5.5	0.4	6.6	0.4	
11	1.1	0.1	2.2	0.2	3.3	0.2	4.4	0.3	5.6	0.4	6.7	0.5	
12	1.1	0.1	2.3	0.2	3.4	0.3	4.5	0.3	5.7	0.4	6.8	0.5	
13	1.2	0.1	2.3	0.2	3.5	0.3	4.6	0.4	5.8	0.5	6.10	0.6	
14	1.2	0.1	2.3	0.2	3.5	0.3	4.7	0.4	5.9	0.5	6.11	0.6	
15	1.2	0.1	2.4	0.2	3.6	0.3	4.8	0.4	5.11	0.5	6.13	0.6	
16	1.3	0.1	2.5	0.2	3.7	0.3	4.10	0.4	5.12	0.6	6.14	0.7	
17	1.3	0.1	2.5	0.2	3.8	0.4	4.11	0.5	5.13	0.6	6.16	0.7	
18	1.3	0.1	2.6	0.3	3.9	0.4	4.12	0.5	5.15	0.7	6.19	0.8	
19	1.3	0.1	2.7	0.3	3.10	0.4	4.14	0.6	5.17	0.7	6.21	0.8	
20	1.4	0.1	2.8	0.3	3.12	0.4	4.16	0.6	5.19	0.7	6.23	0.9	
21	1.4	0.2	2.9	0.3	3.13	0.5	4.17	0.6	5.21	0.8	6.25	0.9	
22	1.5	0.2	2.10	0.3	3.14	0.5	4.19	0.6	5.24	0.8	6.28	1.0	
23	1.5	0.2	2.11	0.3	3.16	0.5	4.21	0.7	5.26	0.9	6.31	1.0	
24	1.6	0.2	2.12	0.4	3.17	0.5	4.23	0.7	5.29	0.9	6.34	1.1	
25	1.6	0.2	2.13	0.4	3.19	0.6	4.25	0.7	5.31	0.9	6.37	1.1	
26	1.7	0.2	2.14	0.4	3.21	0.6	4.27	0.8	5.34	1.0	6.41	1.2	
27	1.7	0.2	2.15	0.4	3.22	0.6	4.29	0.8	5.37	1.0	6.44	1.2	
28	1.8	0.2	2.16	0.4	3.24	0.6	4.32	0.9	5.40	1.1	6.48	1.3	
29	1.9	0.2	2.17	0.4	3.26	0.7	4.34	0.9	5.43	1.1	6.52	1.3	
30	1.10	0.2	2.19	0.5	3.28	0.7	4.37	0.9	5.47	1.2	6.56	1.4	
31	1.10	0.2	2.20	0.5	3.30	0.7	4.40	1.0	5.50	1.2	7.0	1.4	
32	1.11	0.2	2.22	0.5	3.33	0.7	4.43	1.0	5.54	1.3	7.5	1.5	
33	1.11	0.2	2.23	0.5	3.35	0.8	4.46	1.0	5.58	1.3	7.10	1.6	
34	1.12	0.2	2.25	0.5	3.37	0.8	4.50	1.1	6.2	1.4	7.15	1.6	
35	1.13	0.3	2.27	0.6	3.40	0.8	4.53	1.1	6.6	1.4	7.20	1.7	
36	1.14	0.3	2.28	0.6	3.43	0.9	4.57	1.2	6.11	1.5	7.25	1.8	
37	1.15	0.3	2.30	0.6	3.45	0.9	5.1	1.2	6.16	1.5	7.31	1.8	
38	1.16	0.3	2.32	0.6	3.48	0.9	5.5	1.3	6.21	1.6	7.37	1.9	
39	1.17	0.3	2.34	0.6	3.52	1.0	5.9	1.3	6.26	1.6	7.44	2.0	
40	1.18	0.3	2.37	0.7	3.55	1.0	5.14	1.3	6.32	1.7	7.51	2.0	
41	1.19	0.3	2.39	0.7	3.59	1.0	5.18	1.4	6.38	1.7	7.58	2.1	
42	1.21	0.4	2.41	0.7	4.2	1.1	5.23	1.4	6.44	1.8	8.5	2.2	
43	1.22	0.4	2.44	0.7	4.6	1.1	5.28	1.5	6.51	1.9	8.13	2.2	
44	1.23	0.4	2.47	0.8	4.10	1.2	5.34	1.5	6.58	1.9	8.21	2.3	
45	1.25	0.4	2.50	0.8	4.15	1.2	5.40	1.6	7.5	2.0	8.30	2.4	
46	1.26	0.4	2.53	0.8	4.19	1.2	5.46	1.7	7.13	2.1	8.39	2.5	
47	1.28	0.4	2.56	0.9	4.24	1.3	5.52	1.7	7.21	2.2	8.49	2.6	
48	1.30	0.4	2.59	0.9	4.29	1.3	5.59	1.8	7.29	2.2	8.59	2.7	
49	1.31	0.5	3.3	0.9	4.36	1.4	6.6	1.8	7.38	2.3	9.10	2.8	
50	1.33	0.5	3.7	1.0	4.40	1.4	6.14	1.9	7.48	2.4	9.21	2.9	
51	1.35	0.5	3.11	1.0	4.46	1.5	6.22	2.0	7.58	2.5	9.34	3.0	
52	1.37	0.5	3.15	1.0	4.52	1.5	6.30	2.1	8.8	2.6	9.46	3.1	
53	1.39	0.5	3.19	1.1	4.59	1.6	6.40	2.1	8.20	2.7	10.0	3.2	
54	1.42	0.5	3.24	1.1	5.7	1.6	6.49	2.2	8.32	2.8	10.15	3.3	
55	1.45	0.6	3.29	1.1	5.14	1.7	6.59	2.3	8.44	2.9	10.30	3.5	
56	1.47	0.6	3.33	1.2	5.19	1.8	7.10	2.4	8.58	3.0	10.46	3.6	
57	1.50	0.6	3.41	1.2	5.31	1.9	7.22	2.5	9.13	3.1	11.4	3.7	
58	1.53	0.6	3.47	1.3	5.40	1.9	7.34	2.6	9.28	3.2	11.22	3.8	
59	1.57	0.7	3.53	1.3	5.50	2.0	7.47	2.7	9.45	3.3	11.43	4.0	
60	2.0	0.7	4.0	1.4	6.0	2.1	8.1	2.8	10.2	3.5	12.4	4.2	
61	2.4	0.7	4.8	1.4	6.12	2.2	8.16	2.9	10.21	3.6	12.27	4.4	
62	2.8	0.8	4.16	1.5	6.24	2.3	8.33	3.0	10.42	3.8	12.52	4.6	
63	2.12	0.8	4.25	1.6	6.37	2.4	8.50	3.2	11.4	4.0	13.19	4.8	
64	2.17	0.8	4.34	1.6	6.51	2.5	9.9	3.3	11.28	4.1	13.48	5.0	

Bearing Amplitude and Time Amplitude at Rising and Setting of the Sun. (z)												
Declination.												
Lat.	7°		8°		9°		10°		11°		12°	
	Bearing Ampl.	Time Ampl.	Bearing Ampl.	Time Ampl.	Bearing Ampl.	Time Ampl.	Bearing Ampl.	Time Ampl.	Bearing Ampl.	Time Ampl.	Bearing Ampl.	Time Ampl.
	h. m.		h. m.		h. m.		h. m.		h. m.		h. m.	
1	7.0	0.0	8.0	0.1	9.0	0.1	10.0	0.1	11.0	0.1	12.0	0.1
2	7.0	0.1	8.0	0.1	9.0	0.1	10.0	0.1	11.0	0.2	12.0	0.2
3	7.1	0.1	8.1	0.2	9.1	0.2	10.1	0.2	11.1	0.2	12.1	0.3
4	7.1	0.2	8.1	0.2	9.1	0.3	10.2	0.3	11.2	0.3	12.2	0.3
5	7.2	0.2	8.2	0.3	9.2	0.3	10.3	0.4	11.3	0.4	12.3	0.4
6	7.3	0.3	8.3	0.3	9.3	0.4	10.4	0.4	11.4	0.5	12.4	0.5
7	7.4	0.3	8.4	0.4	9.4	0.4	10.5	0.5	11.5	0.5	12.5	0.6
8	7.5	0.4	8.5	0.5	9.5	0.5	10.6	0.6	11.6	0.6	12.6	0.7
9	7.5	0.4	8.6	0.5	9.7	0.6	10.8	0.6	11.8	0.6	12.7	0.8
10	7.7	0.5	8.8	0.6	9.9	0.6	10.10	0.7	11.11	0.8	12.12	0.9
11	7.9	0.5	8.9	0.6	9.10	0.7	10.12	0.8	11.13	0.9	12.14	0.9
12	7.10	0.6	8.11	0.7	9.12	0.8	10.14	0.9	11.15	0.9	12.16	0.10
13	7.11	0.6	8.12	0.7	9.14	0.8	10.15	0.9	11.17	0.10	12.19	0.11
14	7.13	0.7	8.15	0.8	9.17	0.9	10.18	0.10	11.20	0.11	12.22	0.12
15	7.15	0.8	8.17	0.9	9.19	0.10	10.21	0.11	11.23	0.12	12.25	0.13
16	7.17	0.8	8.19	0.9	9.22	0.10	10.24	0.12	11.27	0.13	12.29	0.14
17	7.19	0.9	8.22	0.10	9.25	0.11	10.27	0.13	11.30	0.14	12.33	0.15
18	7.22	0.9	8.25	0.10	9.28	0.12	10.30	0.13	11.34	0.14	12.38	0.16
19	7.24	0.10	8.28	0.11	9.31	0.12	10.34	0.14	11.38	0.15	12.42	0.17
20	7.27	0.10	8.31	0.12	9.35	0.13	10.39	0.15	11.43	0.16	12.47	0.18
21	7.30	0.11	8.34	0.12	9.38	0.14	10.43	0.16	11.48	0.17	12.52	0.19
22	7.33	0.11	8.38	0.13	9.43	0.15	10.48	0.16	11.53	0.18	12.58	0.20
23	7.36	0.12	8.42	0.14	9.47	0.15	10.53	0.17	11.58	0.19	13.0	0.21
24	7.40	0.13	8.46	0.14	9.52	0.16	10.58	0.18	12.0	0.20	13.0	0.22
25	7.44	0.13	8.50	0.15	9.56	0.17	11.0	0.19	12.0	0.21	13.16	0.23
26	7.48	0.14	8.55	0.16	10.0	0.18	11.0	0.20	12.15	0.22	13.22	0.24
27	7.52	0.14	8.59	0.16	10.0	0.19	11.15	0.21	12.22	0.23	13.29	0.25
28	7.56	0.15	9.0	0.17	10.12	0.19	11.21	0.22	12.29	0.24	13.37	0.26
29	8.0	0.16	9.0	0.18	10.18	0.20	11.27	0.22	12.36	0.25	13.45	0.27
30	8.0	0.16	9.15	0.19	10.24	0.21	11.34	0.23	12.44	0.26	13.53	0.28
31	8.10	0.17	9.21	0.19	10.31	0.22	11.41	0.24	12.52	0.27	14.0	0.29
32	8.16	0.18	9.27	0.20	10.38	0.23	11.49	0.25	13.0	0.28	14.11	0.31
33	8.21	0.18	9.33	0.21	10.45	0.24	11.57	0.26	13.0	0.29	14.21	0.32
34	8.27	0.19	9.40	0.22	10.52	0.25	12.0	0.27	13.18	0.30	14.32	0.33
35	8.33	0.20	9.47	0.23	11.0	0.25	12.14	0.28	13.28	0.31	14.43	0.34
36	8.40	0.20	9.54	0.23	11.0	0.26	12.24	0.29	13.39	0.32	14.54	0.36
37	8.47	0.21	10.0	0.24	11.18	0.27	12.34	0.31	13.49	0.34	15.0	0.37
38	8.54	0.22	10.11	0.25	11.27	0.28	12.44	0.32	14.0	0.35	15.18	0.38
39	9.0	0.23	10.19	0.26	11.37	0.29	12.55	0.33	14.13	0.36	15.31	0.40
40	9.0	0.24	10.28	0.27	11.47	0.31	13.0	0.34	14.25	0.38	15.45	0.41
41	9.18	0.25	10.38	0.28	11.58	0.32	13.18	0.35	14.39	0.39	16.0	0.43
42	9.26	0.25	10.48	0.29	12.0	0.33	13.31	0.37	14.53	0.40	16.15	0.44
43	9.35	0.26	10.58	0.30	12.11	0.34	13.44	0.38	15.0	0.42	16.31	0.46
44	9.45	0.27	11.0	0.31	12.24	0.35	13.58	0.39	15.23	0.43	16.48	0.47
45	9.55	0.28	11.21	0.32	12.47	0.36	14.13	0.41	15.39	0.45	17.0	0.49
46	10.0	0.29	11.33	0.33	13.0	0.38	14.29	0.42	15.57	0.46	17.25	0.51
47	10.18	0.30	11.47	0.35	13.16	0.39	14.45	0.44	16.15	0.48	17.45	0.53
48	10.30	0.31	12.0	0.36	13.31	0.41	15.0	0.45	16.34	0.50	18.0	0.55
49	10.42	0.32	12.15	0.37	13.48	0.42	15.21	0.47	16.55	0.52	18.28	0.57
50	10.58	0.34	12.30	0.39	14.0	0.44	15.40	0.49	17.16	0.54	18.52	0.59
51	11.10	0.35	12.47	0.40	14.24	0.45	16.0	0.50	17.39	0.56	19.18	1.0
52	11.25	0.36	13.0	0.41	14.43	0.47	16.23	0.52	18.0	0.58	19.44	1.0
53	11.41	0.38	13.22	0.43	15.0	0.49	16.46	0.54	18.29	1.0	20.13	1.0
54	11.58	0.39	13.42	0.45	15.26	0.50	17.11	0.56	18.57	1.0	20.43	1.0
55	12.18	0.40	14.0	0.46	15.50	0.52	17.37	0.58	19.26	1.0	21.15	1.1
56	12.35	0.42	14.25	0.48	16.15	0.54	18.0	1.0	19.57	1.0	21.50	1.1
57	12.58	0.44	14.48	0.50	16.42	0.56	18.36	1.0	20.31	1.0	22.26	1.1
58	13.18	0.45	15.13	0.52	17.10	0.59	19.0	1.0	21.0	1.1	23.0	1.1
59	13.41	0.47	15.41	0.54	17.41	1.0	19.42	1.0	21.44	1.1	23.49	1.2
60	14.0	0.49	16.10	0.56	18.14	1.0	20.19	1.1	22.26	1.1	24.34	1.2
61	14.34	0.51	16.41	0.59	18.49	1.0	20.59	1.1	23.11	1.2	25.24	1.3
62	15.0	0.53	17.15	1.0	19.38	1.0	21.43	1.1	23.59	1.2	26.17	1.3
63	15.34	0.56	17.51	1.0	20.0	1.1	22.29	1.2	24.51	1.3	27.15	1.3
64	16.0	0.58	18.31	1.0	20.54	1.1	23.20	1.2	25.48	1.3	28.19	1.4

(2) Bearing Amplitude and Time Amplitude at Rising and Setting of the Sun.

Lat.	Declination.									
	13°		14°		15°		16°		17°	
	Bearing A. p. l.	Time Ampl.	Bearing Ampl.	Time Ampl.	Bearing Ampl.	Time Ampl.	Bearing Ampl.	Time Ampl.	Bearing Ampl.	Time Ampl.
1	13. 0	0. 1	14. 0	0. 1	15. 0	0. 1	16. 0	0. 1	17. 0	0. 1
2	13. 0	0. 2	14. 0	0. 2	15. 0	0. 2	16. 1	0. 2	17. 1	0. 2
3	13. 1	0. 3	14. 1	0. 3	15. 1	0. 3	16. 1	0. 3	17. 2	0. 4
4	13. 2	0. 4	14. 2	0. 4	15. 2	0. 4	16. 2	0. 5	17. 3	0. 5
5	13. 3	0. 5	14. 3	0. 5	15. 4	0. 5	16. 4	0. 6	17. 4	0. 6
6	13. 4	0. 6	14. 4	0. 6	15. 5	0. 6	16. 5	0. 7	17. 5	0. 7
7	13. 4	0. 6	14. 6	0. 7	15. 7	0. 8	16. 7	0. 8	17. 6	0. 9
8	13. 8	0. 7	14. 8	0. 8	15. 9	0. 9	16. 10	0. 9	17. 10	0. 10
9	13. 10	0. 8	14. 10	0. 9	15. 11	0. 10	16. 12	0. 10	17. 13	0. 11
10	13. 13	0. 9	14. 14	0. 10	15. 15	0. 11	16. 16	0. 12	17. 17	0. 12
11	13. 15	0. 10	14. 15	0. 11	15. 17	0. 12	16. 18	0. 13	17. 20	0. 14
12	13. 18	0. 11	14. 19	0. 12	15. 21	0. 13	16. 22	0. 14	17. 23	0. 15
13	13. 21	0. 12	14. 22	0. 13	15. 24	0. 14	16. 26	0. 15	17. 28	0. 16
14	13. 24	0. 13	14. 26	0. 14	15. 28	0. 15	16. 30	0. 16	17. 32	0. 17
15	13. 28	0. 14	14. 30	0. 15	15. 33	0. 16	16. 35	0. 18	17. 37	0. 19
16	13. 32	0. 15	14. 34	0. 16	15. 37	0. 18	16. 40	0. 19	17. 43	0. 20
17	13. 36	0. 16	14. 38	0. 17	15. 42	0. 19	16. 45	0. 20	17. 48	0. 21
18	13. 41	0. 17	14. 44	0. 19	15. 47	0. 20	16. 51	0. 21	17. 51	0. 23
19	13. 46	0. 18	14. 50	0. 20	15. 53	0. 21	16. 57	0. 23	18. 1	0. 24
20	13. 51	0. 19	14. 55	0. 21	15. 59	0. 22	17. 4	0. 24	18. 8	0. 26
21	13. 57	0. 20	15. 1	0. 22	16. 6	0. 24	17. 11	0. 25	18. 15	0. 27
22	14. 1	0. 21	15. 8	0. 23	16. 13	0. 25	17. 18	0. 27	18. 23	0. 28
23	14. 9	0. 22	15. 16	0. 24	16. 20	0. 26	17. 26	0. 28	18. 31	0. 30
24	14. 16	0. 24	15. 22	0. 26	16. 28	0. 27	17. 34	0. 29	18. 39	0. 31
25	14. 23	0. 25	15. 29	0. 27	16. 36	0. 29	17. 43	0. 31	18. 48	0. 33
26	14. 30	0. 26	15. 37	0. 28	16. 45	0. 30	17. 52	0. 32	18. 59	0. 34
27	14. 38	0. 27	15. 45	0. 29	16. 54	0. 31	18. 1	0. 34	19. 9	0. 36
28	14. 46	0. 28	15. 54	0. 30	17. 3	0. 33	18. 11	0. 35	19. 20	0. 37
29	14. 54	0. 29	16. 3	0. 32	17. 13	0. 34	18. 22	0. 37	19. 32	0. 39
30	15. 3	0. 31	16. 13	0. 33	17. 23	0. 36	18. 34	0. 38	19. 44	0. 41
31	15. 13	0. 32	16. 23	0. 34	17. 34	0. 37	18. 46	0. 40	19. 57	0. 42
32	15. 23	0. 33	16. 34	0. 36	17. 46	0. 39	18. 58	0. 41	20. 10	0. 44
33	15. 34	0. 34	16. 46	0. 37	17. 59	0. 40	19. 11	0. 43	20. 24	0. 46
34	15. 45	0. 36	16. 58	0. 39	18. 12	0. 42	19. 25	0. 45	20. 38	0. 48
35	15. 57	0. 37	17. 11	0. 40	18. 26	0. 43	19. 40	0. 46	20. 51	0. 49
36	16. 9	0. 39	17. 24	0. 42	18. 40	0. 45	19. 56	0. 48	21. 11	0. 51
37	16. 22	0. 40	17. 38	0. 43	18. 55	0. 47	20. 11	0. 50	21. 28	0. 53
38	16. 36	0. 42	17. 53	0. 45	19. 10	0. 48	20. 28	0. 52	21. 47	0. 55
39	16. 50	0. 43	18. 8	0. 47	19. 27	0. 50	20. 48	0. 54	22. 6	0. 57
40	17. 5	0. 45	18. 25	0. 48	19. 45	0. 52	21. 5	0. 56	22. 26	0. 59
41	17. 21	0. 46	18. 42	0. 50	20. 3	0. 54	21. 25	0. 58	22. 51	1. 2
42	17. 37	0. 48	19. 0	0. 52	20. 23	0. 56	21. 46	1. 0	23. 10	1. 4
43	17. 55	0. 50	19. 19	0. 54	20. 43	0. 58	22. 8	1. 2	23. 34	1. 6
44	18. 13	0. 52	19. 38	0. 56	21. 5	1. 0	22. 32	1. 4	23. 59	1. 9
45	18. 33	0. 53	20. 0	0. 58	21. 28	1. 2	22. 57	1. 7	24. 25	1. 11
46	18. 54	0. 55	20. 23	1. 0	21. 53	1. 4	23. 23	1. 9	24. 53	1. 14
47	19. 16	0. 57	20. 47	1. 2	22. 18	1. 7	23. 50	1. 12	25. 23	1. 17
48	19. 39	0. 59	21. 12	1. 4	22. 45	1. 9	24. 20	1. 14	25. 54	1. 19
49	20. 1	1. 2	21. 38	1. 7	23. 14	1. 12	24. 51	1. 17	26. 28	1. 22
50	20. 29	1. 4	22. 7	1. 9	23. 45	1. 14	25. 24	1. 20	27. 3	1. 25
51	20. 57	1. 6	22. 37	1. 12	24. 18	1. 17	25. 59	1. 23	27. 41	1. 29
52	21. 26	1. 9	23. 9	1. 14	24. 52	1. 20	26. 36	1. 26	28. 21	1. 32
53	21. 57	1. 11	23. 43	1. 17	25. 28	1. 23	27. 16	1. 29	29. 4	1. 36
54	22. 30	1. 14	24. 18	1. 20	26. 7	1. 27	27. 58	1. 33	29. 50	1. 40
55	23. 6	1. 17	24. 57	1. 23	26. 50	1. 30	28. 43	1. 37	30. 39	1. 44
56	23. 43	1. 20	25. 38	1. 27	27. 34	1. 34	29. 32	1. 41	31. 33	1. 48
57	24. 23	1. 23	26. 22	1. 30	28. 22	1. 37	30. 24	1. 45	32. 28	1. 52
58	25. 7	1. 27	27. 10	1. 34	29. 14	1. 42	31. 20	1. 49	33. 29	1. 57
59	25. 54	1. 30	28. 1	1. 38	30. 10	1. 46	32. 21	1. 54	34. 35	2. 2
60	26. 44	1. 34	28. 56	1. 42	31. 10	1. 51	33. 27	1. 59	35. 47	2. 8
61	27. 39	1. 38	29. 56	1. 47	32. 16	1. 56	34. 39	2. 5	37. 5	3. 14
62	28. 38	1. 43	31. 1	1. 52	33. 27	2. 1	35. 57	2. 11	38. 31	2. 20
63	29. 42	1. 48	32. 12	1. 57	34. 46	2. 7	37. 23	2. 17	40. 5	2. 27
64	30. 52	1. 53	33. 30	2. 3	36. 11	2. 13	38. 58	2. 24	41. 50	2. 36

(z) Bearing Amplitude and Time Amplitude at Rising and Setting of the Sun.

Declination.

Lat.	19°		20°		21°		22°		23°		23° 30'		23° 45'	
	Bearing Ampl.	Time Ampl.	Bearing Ampl.	Time Ampl.	Bearing Ampl.	Time Ampl.	Bearing Ampl.	Time Ampl.	Bearing Ampl.	Time Ampl.	Bearing Ampl.	Time Ampl.	Bearing Ampl.	Time Ampl.
°	°	h. m.	°	h. m.	°	h. m.	°	h. m.	°	h. m.	°	h. m.	°	h. m.
1	19. 0	0. 1	20. 0	0. 1	21. 0	0. 2	22. 0	0. 2	23. 1	0. 1	23.31	0. 1	23.46	0. 2
2	19. 1	0. 3	20. 1	0. 3	21. 1	0. 3	22. 1	0. 3	23. 2	0. 3	23.32	0. 3	23.47	0. 4
3	19. 2	0. 4	20. 2	0. 4	21. 2	0. 5	22. 2	0. 5	23. 3	0. 5	23.33	0. 5	23.48	0. 6
4	19. 3	0. 6	20. 3	0. 6	21. 3	0. 6	22. 3	0. 6	23. 4	0. 7	23.34	0. 7	23.49	0. 8
5	19. 4	0. 7	20. 5	0. 7	21. 5	0. 8	22. 5	0. 8	23. 5	0. 9	23.36	0. 9	23.51	0.10
6	19. 6	0. 8	20. 7	0. 9	21. 7	0. 9	22. 7	0.10	23. 8	0.10	23.38	0.10	23.53	0.11
7	19. 9	0.10	20. 9	0.10	21.10	0.11	22.10	0.11	23.11	0.12	23.41	0.12	23.56	0.13
8	19.12	0.11	20.12	0.12	21.13	0.12	22.14	0.13	23.14	0.14	23.44	0.14	23.59	0.15
9	19.15	0.12	20.16	0.13	21.17	0.14	22.18	0.15	23.18	0.15	23.48	0.15	24. 3	0.16
10	19.19	0.14	20.20	0.15	21.21	0.16	22.22	0.16	23.23	0.17	23.53	0.17	24. 8	0.18
11	19.22	0.15	20.24	0.16	21.25	0.17	22.26	0.18	23.27	0.19	23.58	0.19	24.13	0.20
12	19.26	0.17	20.28	0.18	21.30	0.19	22.31	0.20	23.33	0.21	24. 3	0.21	24.18	0.22
13	19.31	0.18	20.33	0.19	21.35	0.20	22.37	0.21	23.39	0.22	24. 9	0.23	24.25	0.23
14	19.36	0.20	20.38	0.21	21.41	0.22	22.43	0.23	23.45	0.24	24.16	0.24	24.32	0.25
15	19.42	0.21	20.44	0.22	21.46	0.24	22.49	0.25	23.51	0.26	24.23	0.26	24.39	0.27
16	19.48	0.23	20.51	0.24	21.53	0.25	22.56	0.27	23.59	0.28	24.30	0.28	24.46	0.29
17	19.54	0.24	20.57	0.26	22. 0	0.27	23. 4	0.28	24. 7	0.30	24.38	0.30	24.54	0.31
18	20. 1	0.26	21. 5	0.27	22. 8	0.29	23.12	0.30	24.15	0.32	24.47	0.32	25. 3	0.33
19	20. 8	0.27	21.12	0.29	22.16	0.30	23.21	0.32	24.24	0.34	24.56	0.34	25.12	0.35
20	20.16	0.29	21.21	0.30	22.25	0.32	23.30	0.34	24.34	0.36	25. 6	0.36	25.22	0.37
21	20.24	0.30	21.30	0.32	22.34	0.34	23.40	0.36	24.45	0.38	25.17	0.38	25.33	0.39
22	20.33	0.32	21.39	0.34	22.44	0.36	23.50	0.38	24.56	0.40	25.28	0.40	25.44	0.41
23	20.43	0.34	21.49	0.36	22.55	0.37	24. 1	0.39	25. 7	0.42	25.40	0.43	25.57	0.43
24	20.53	0.35	21.59	0.37	23. 6	0.39	24.18	0.41	25.19	0.44	25.53	0.45	26.10	0.45
25	21. 3	0.37	22.10	0.39	23.18	0.41	24.25	0.43	25.32	0.46	26. 6	0.47	26.23	0.47
26	21.14	0.39	22.22	0.41	23.30	0.43	24.38	0.45	25.46	0.48	26.20	0.49	26.37	0.49
27	21.26	0.40	22.34	0.43	23.43	0.45	24.52	0.48	26. 1	0.50	26.35	0.51	26.52	0.51
28	21.38	0.42	22.47	0.45	23.57	0.47	25. 6	0.50	26.16	0.52	26.51	0.53	27. 8	0.54
29	21.51	0.44	23. 1	0.47	24.12	0.49	25.22	0.52	26.22	0.54	27. 8	0.55	27.25	0.56
30	22. 5	0.46	23.16	0.49	24.27	0.51	25.38	0.54	26.49	0.57	27.25	0.58	27.43	0.59
31	22.20	0.48	23.31	0.51	24.43	0.53	25.56	0.56	27. 7	0.59	27.44	1. 0	28. 2	1. 1
32	22.35	0.50	23.47	0.53	25. 0	0.56	26.13	0.58	27.26	1. 1	28. 3	1. 3	28.21	1. 4
33	22.51	0.52	24. 4	0.55	25.18	0.58	26.32	1. 1	27.46	1. 4	28.24	1. 5	28.42	1. 6
34	23. 7	0.54	24.22	0.57	25.37	1. 0	26.52	1. 3	28. 7	1. 7	28.45	1. 8	29. 4	1. 9
35	23.25	0.56	24.41	0.59	25.57	1. 2	27.13	1. 6	28.30	1. 9	29. 8	1.11	29.27	1.13
36	23.44	0.58	25. 1	1. 1	26.18	1. 5	27.35	1. 8	28.53	1.12	29.32	1.14	29.51	1.15
37	24. 3	1. 0	25.21	1. 4	26.40	1. 7	27.58	1.11	29.17	1.15	29.57	1.16	30.17	1.17
38	24.24	1. 2	25.43	1. 6	27. 3	1.10	28.23	1.14	29.44	1.17	30.24	1.19	30.44	1.20
39	24.46	1. 5	26. 7	1. 9	27.28	1.12	28.49	1.16	30.11	1.20	30.52	1.22	31.13	1.24
40	25. 9	1. 7	26.31	1.11	27.54	1.15	29.17	1.19	30.40	1.23	31.22	1.25	31.43	1.27
41	25.33	1.10	26.57	1.14	28.21	1.18	29.46	1.22	31.11	1.27	31.54	1.29	32.15	1.30
42	25.59	1.12	27.24	1.17	28.50	1.21	30.16	1.25	31.43	1.30	32.27	1.32	32.49	1.34
43	26.26	1.15	27.53	1.19	29.20	1.24	30.49	1.29	32.18	1.33	33. 3	1.35	33.25	1.37
44	26.55	1.18	28.24	1.22	29.53	1.27	31.23	1.32	32.54	1.37	33.46	1.39	34. 3	1.41
45	27.25	1.21	28.56	1.25	30.27	1.30	31.59	1.35	33.33	1.40	34.20	1.43	34.43	1.44
46	27.57	1.24	29.30	1.29	31. 3	1.34	32.38	1.39	34.14	1.44	35. 2	1.47	35.26	1.48
47	28.31	1.27	30. 6	1.32	31.42	1.37	33.19	1.43	34.57	1.48	35.47	1.51	36.12	1.52
48	29. 7	1.30	30.44	1.35	32.23	1.41	34. 3	1.47	35.44	1.53	36.35	1.56	37. 0	1.57
49	29.45	1.33	31.25	1.39	33. 6	1.45	34.49	1.51	36.33	1.57	37.26	2. 0	37.52	2. 1
50	30.26	1.37	32. 9	1.43	33.53	1.49	35.38	1.55	37.26	2. 2	38.20	2. 5	38.48	2. 6
51	31. 9	1.41	32.55	1.47	34.43	1.53	36.32	2. 0	38.23	2. 6	39.19	2. 9	39.47	2.11
52	31.56	1.45	33.45	1.51	35.36	1.58	37.29	2. 5	39.24	2.12	40.22	2.15	40.51	2.17
53	32.45	1.49	34.38	1.56	36.33	2. 2	38.30	2.10	40.29	2.17	41.29	2.21	42. 0	2.23
54	33.38	1.53	35.35	2. 0	37.34	2. 8	39.36	2.15	41.40	2.23	42.43	2.27	43.15	2.29
55	34.35	1.58	36.36	2. 5	38.40	2.13	40.47	2.21	42.56	2.29	44. 3	2.33	44.36	2.35
56	35.36	2. 3	37.42	2.11	39.51	2.19	42. 4	2.27	44.20	2.36	45.29	2.40	46. 4	2.43
57	36.42	2. 8	38.54	2.16	41. 9	2.25	43.27	2.34	45.51	2.43	47. 4	2.48	47.41	2.50
58	37.54	2.14	40.12	2.22	42.33	2.32	44.59	2.41	47.30	2.51	48.48	2.56	49.28	2.59
59	39.12	2.20	41.37	2.29	44. 6	2.39	46.40	2.49	49.21	3. 0	50.44	3. 5	51.26	3. 8
60	40.37	2.26	43.10	2.36	45.47	2.47	48.32	2.58	51.24	3. 9	52.54	3.15	53.40	3.19
61	42.11	2.34	44.52	2.44	47.40	2.55	50.36	3. 7	53.42	3.20	55.20	3.27	56.10	3.30
62	43.55	2.41	46.46	2.53	49.46	3. 5	52.56	3.18	56.20	3.32	58. 9	3.39	59. 5	3.43
63	45.49	2.50	48.53	3. 2	52. 8	3.16	55.36	3.30	59.23	3.46	61.26	3.55	62.31	3.59
64	47.58	3. 0	51.17	3.13	54.50	3.28	58.43	3.44	63. 2	4. 2	65.27	4.13	66.45	4.18

(z 1) The Time from Noon, at which the True Bearing of the Sun is E. or W.

Declination of the same Name as the Latitude.

Lat.	0°	2°	4°	6°	8°	10°	12°	14°	16°	18°	20°	22°	24°
°	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.
0	6. 0	6. 0	6. 0	6. 0	6. 0	6. 0	6. 0	6. 0	6. 0	6. 0	6. 0	6. 0	6. 0
1	6. 0	4. 0	5. 2	5. 22	5. 31	5. 37	5. 41	5. 44	5. 46	5. 48	5. 49	5. 50	5. 51
2	6. 0	0. 0	4. 0	4. 42	5. 2	5. 14	5. 22	5. 28	5. 32	5. 35	5. 38	5. 40	5. 42
3	6. 0	3. 13	2. 46	4. 0	4. 32	4. 51	5. 3	5. 11	5. 18	5. 23	5. 27	5. 30	5. 33
4	6. 0	4. 0	0. 0	3. 13	4. 1	4. 27	4. 43	4. 55	5. 4	5. 10	5. 16	5. 20	5. 24
5	6. 0	4. 26	2. 28	2. 15	3. 26	4. 1	4. 23	4. 38	4. 49	4. 58	5. 4	5. 10	5. 15
6	6. 0	4. 42	3. 13	0. 0	2. 46	3. 34	4. 1	4. 20	4. 34	4. 45	4. 53	5. 0	5. 5
7	6. 0	4. 54	3. 41	2. 5	1. 56	3. 3	3. 39	4. 2	4. 19	4. 31	4. 41	4. 49	4. 56
8	6. 0	5. 2	4. 1	2. 46	0. 0	2. 29	3. 14	3. 43	4. 3	4. 17	4. 29	4. 39	4. 46
9	6. 0	5. 9	4. 15	3. 14	1. 50	1. 44	2. 47	3. 22	3. 46	4. 3	4. 17	4. 28	4. 37
10	6. 0	5. 14	4. 27	3. 34	2. 29	0. 0	2. 16	3. 0	3. 28	3. 49	4. 4	4. 16	4. 27
11	6. 0	5. 19	4. 36	3. 49	2. 55	1. 40	1. 35	2. 35	3. 9	3. 33	3. 51	4. 5	4. 16
12	6. 0	5. 22	4. 43	4. 1	3. 14	2. 16	0. 0	2. 6	2. 49	3. 17	3. 37	3. 53	4. 0
13	6. 0	5. 25	4. 49	4. 12	3. 30	2. 41	1. 32	1. 29	2. 26	2. 59	3. 23	3. 41	3. 55
14	6. 0	5. 28	4. 55	4. 20	3. 43	3. 0	2. 6	0. 0	1. 58	2. 40	3. 7	3. 28	3. 44
15	6. 0	5. 30	4. 59	4. 28	3. 53	3. 15	2. 30	1. 26	1. 23	2. 18	2. 50	3. 14	3. 32
16	6. 0	5. 32	5. 4	4. 34	4. 3	3. 28	2. 49	1. 58	0. 0	1. 52	2. 32	2. 59	3. 20
17	6. 0	5. 34	5. 7	4. 40	4. 11	3. 39	3. 4	2. 21	1. 21	1. 19	2. 11	2. 43	3. 7
18	6. 0	5. 35	5. 10	4. 45	4. 17	3. 49	3. 17	2. 40	1. 52	0. 0	1. 47	2. 26	2. 53
19	6. 0	5. 37	5. 13	4. 49	4. 24	3. 57	3. 28	2. 54	2. 14	1. 17	1. 16	2. 6	2. 37
20	6. 0	5. 38	5. 16	4. 53	4. 29	4. 4	3. 37	3. 7	2. 32	1. 47	0. 0	1. 43	2. 21
21	6. 0	5. 39	5. 18	4. 56	4. 34	4. 11	3. 46	3. 18	2. 47	2. 9	1. 14	1. 13	2. 2
22	6. 0	5. 40	5. 20	5. 0	4. 39	4. 16	3. 53	3. 28	2. 59	2. 26	1. 43	0. 0	1. 39
23	6. 0	5. 41	5. 22	5. 3	4. 43	4. 22	4. 0	3. 36	3. 10	2. 40	2. 4	1. 11	1. 10
24	6. 0	5. 42	5. 24	5. 5	4. 46	4. 27	4. 6	3. 44	3. 20	2. 53	2. 21	1. 39	0. 0
25	6. 0	5. 43	5. 26	5. 8	4. 50	4. 31	4. 12	3. 51	3. 28	3. 3	2. 35	2. 0	1. 9
26	6. 0	5. 44	5. 27	5. 10	4. 53	4. 35	4. 17	3. 57	3. 36	3. 13	2. 47	2. 16	1. 36
27	6. 0	5. 44	5. 28	5. 12	4. 56	4. 39	4. 21	4. 3	3. 43	3. 22	3. 0	2. 30	1. 56
28	6. 0	5. 45	5. 30	5. 14	4. 59	4. 43	4. 26	4. 8	3. 49	3. 29	3. 7	2. 42	2. 13
29	6. 0	5. 46	5. 31	5. 16	5. 1	4. 46	4. 30	4. 13	3. 55	3. 36	3. 16	2. 53	2. 26
30	6. 0	5. 46	5. 32	5. 18	5. 4	4. 49	4. 34	4. 18	4. 1	3. 43	3. 24	3. 2	2. 38
31	6. 0	5. 47	5. 33	5. 20	5. 6	4. 52	4. 37	4. 22	4. 6	3. 49	3. 31	3. 11	2. 49
32	6. 0	5. 47	5. 34	5. 21	5. 8	4. 54	4. 40	4. 26	4. 11	3. 55	3. 38	3. 19	2. 58
33	6. 0	5. 48	5. 35	5. 23	5. 10	4. 57	4. 44	4. 30	4. 15	4. 0	3. 44	3. 26	3. 7
34	6. 0	5. 48	5. 36	5. 24	5. 12	4. 59	4. 47	4. 33	4. 19	4. 5	3. 49	3. 33	3. 15
35	6. 0	5. 49	5. 37	5. 25	5. 14	5. 2	4. 49	4. 37	4. 23	4. 9	3. 55	3. 39	3. 22
36	6. 0	5. 49	5. 38	5. 27	5. 15	5. 4	4. 52	4. 40	4. 27	4. 14	4. 0	3. 45	3. 29
37	6. 0	5. 49	5. 39	5. 28	5. 17	5. 6	4. 54	4. 43	4. 31	4. 18	4. 4	3. 50	3. 35
38	6. 0	5. 50	5. 39	5. 29	5. 19	5. 8	4. 57	4. 46	4. 34	4. 22	4. 9	3. 55	3. 41
39	6. 0	5. 50	5. 40	5. 30	5. 20	5. 10	4. 59	4. 48	4. 37	4. 25	4. 13	4. 0	3. 47
40	6. 0	5. 50	5. 41	5. 31	5. 21	5. 11	5. 1	4. 51	4. 40	4. 29	4. 17	4. 5	3. 52
41	6. 0	5. 51	5. 42	5. 32	5. 23	5. 13	5. 3	4. 53	4. 43	4. 32	4. 21	4. 9	3. 57
42	6. 0	5. 51	5. 42	5. 33	5. 24	5. 15	5. 5	4. 56	4. 46	4. 35	4. 25	4. 13	4. 1
43	6. 0	5. 51	5. 43	5. 34	5. 25	5. 16	5. 7	4. 58	4. 48	4. 38	4. 28	4. 17	4. 6
44	6. 0	5. 52	5. 43	5. 35	5. 27	5. 18	5. 9	5. 0	4. 51	4. 41	4. 31	4. 21	4. 10
45	6. 0	5. 52	5. 44	5. 36	5. 28	5. 19	5. 11	5. 2	4. 53	4. 44	4. 35	4. 25	4. 14
46	6. 0	5. 52	5. 45	5. 37	5. 29	5. 21	5. 13	5. 4	4. 56	4. 47	4. 38	4. 28	4. 18
47	6. 0	5. 53	5. 45	5. 38	5. 30	5. 22	5. 14	5. 6	4. 58	4. 49	4. 41	4. 31	4. 22
48	6. 0	5. 53	5. 46	5. 38	5. 31	5. 23	5. 16	5. 8	5. 0	4. 52	4. 43	4. 35	4. 25
49	6. 0	5. 53	5. 46	5. 39	5. 32	5. 25	5. 17	5. 10	5. 2	4. 54	4. 46	4. 38	4. 29
50	6. 0	5. 53	5. 47	5. 40	5. 33	5. 26	5. 19	5. 12	5. 4	4. 57	4. 49	4. 41	4. 32
52	6. 0	5. 54	5. 47	5. 41	5. 35	5. 28	5. 22	5. 15	5. 8	5. 1	4. 54	4. 46	4. 39
54	6. 0	5. 54	5. 48	5. 42	5. 37	5. 31	5. 24	5. 18	5. 12	5. 5	4. 59	4. 52	4. 45
56	6. 0	5. 55	5. 49	5. 44	5. 38	5. 33	5. 27	5. 21	5. 15	5. 9	5. 3	4. 57	4. 50
58	6. 0	5. 55	5. 50	5. 45	5. 40	5. 35	5. 29	5. 24	5. 19	5. 13	5. 7	5. 2	4. 55
60	6. 0	5. 55	5. 51	5. 46	5. 41	5. 37	5. 32	5. 27	5. 22	5. 17	5. 11	5. 6	5. 0
62	6. 0	5. 56	5. 51	5. 47	5. 43	5. 38	5. 34	5. 30	5. 25	5. 20	5. 15	5. 10	5. 5
64	6. 0	5. 56	5. 52	5. 48	5. 44	5. 40	5. 36	5. 32	5. 28	5. 24	5. 19	5. 15	5. 10
66	6. 0	5. 56	5. 53	5. 49	5. 46	5. 42	5. 38	5. 35	5. 31	5. 27	5. 23	5. 19	5. 14
68	6. 0	5. 57	5. 54	5. 50	5. 47	5. 44	5. 40	5. 37	5. 33	5. 30	5. 26	5. 22	5. 19
70	6. 0	5. 57	5. 54	5. 51	5. 48	5. 45	5. 42	5. 39	5. 36	5. 33	5. 30	5. 26	5. 23

Equations of Second Differences for 12 Hours.													(z 2)
Time after Noon or Midnight.			Second Difference.										
			1'	2'	3'	4'	5'	6'	7'	8'	9'	10'	11'	12'
h.	m.	h. m.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12. 0	0. 0	0. 0	0.4	0.8	1.2	1.6	2.1	2.5	2.9	3.3	3.7	4.1	4.5
11.50	0.10	0.10	0.8	1.6	2.4	3.2	4.1	4.9	5.7	6.5	7.3	8.1	8.9
11.40	0.20	0.20	1.2	2.4	3.6	4.8	6.0	7.2	8.4	9.6	10.8	12.0	13.2
11.30	0.30	0.30	1.6	3.1	4.7	6.3	7.9	9.4	11.0	12.6	14.2	15.7	17.3
11.20	0.40	0.40	1.9	3.9	5.8	7.8	9.7	11.6	13.6	15.5	17.4	19.4	21.3
11.10	0.50	0.50	2.3	4.6	6.9	9.2	11.5	13.8	16.0	18.3	20.6	22.9	25.2
11. 0	1. 0	1. 0	2.6	5.3	7.9	10.5	13.2	15.8	18.4	21.1	23.7	26.3	29.0
10.50	1.10	1.10	3.0	5.9	8.9	11.9	14.8	17.8	20.7	23.7	26.7	29.6	32.6
10.40	1.20	1.20	3.3	6.6	9.8	13.1	16.4	19.7	23.0	26.3	29.5	32.8	36.1
10.30	1.30	1.30	3.6	7.2	10.8	14.4	17.9	21.5	25.1	28.7	32.3	35.9	39.5
10.20	1.40	1.40	3.9	7.8	11.6	15.5	19.4	23.3	27.2	31.1	34.9	38.8	42.7
10.10	1.50	1.50	4.2	8.3	12.5	16.7	20.8	25.0	29.2	33.3	37.5	41.7	45.8
10. 0	2. 0	2. 0	4.4	8.9	13.3	17.8	22.2	26.6	31.1	35.5	39.9	44.4	48.8
9.50	2.10	2.10	4.7	9.4	14.1	18.8	23.5	28.2	32.9	37.6	42.3	47.0	51.7
9.40	2.20	2.20	4.9	9.9	14.8	19.8	24.7	29.7	34.6	39.6	44.5	49.5	54.4
9.30	2.30	2.30	5.2	10.4	15.6	20.7	25.9	31.1	36.3	41.5	46.7	51.9	57.0
9.20	2.40	2.40	5.4	10.8	16.2	21.6	27.1	32.5	37.9	43.3	48.7	54.1	59.5
9.10	2.50	2.50	5.6	11.3	16.9	22.5	28.1	33.8	39.4	45.0	50.6	56.3	61.9
9. 0	3. 0	3. 0	5.8	11.7	17.5	23.3	29.1	35.0	40.8	46.6	52.4	58.3	64.1
8.50	3.10	3.10	6.0	12.0	18.1	24.1	30.1	36.1	42.1	48.1	54.2	60.2	66.2
8.40	3.20	3.20	6.2	12.4	18.6	24.8	31.0	37.2	43.4	49.6	55.8	62.0	68.2
8.30	3.30	3.30	6.4	12.7	19.1	25.5	31.8	38.2	44.6	50.9	57.3	63.7	70.0
8.20	3.40	3.40	6.5	13.0	19.6	26.1	32.6	39.1	45.7	52.2	58.7	65.2	71.7
8.10	3.50	3.50	6.7	13.4	20.0	26.7	33.3	40.1	46.7	53.3	60.0	66.7	73.3
8. 0	4. 0	4. 0	6.9	13.8	20.8	27.7	34.6	41.5	48.4	55.4	62.3	69.2	76.1
7.40	4.20	4.20	7.1	14.3	21.4	28.5	35.6	42.8	49.9	57.0	64.2	71.3	78.4
7.20	4.40	4.40	7.3	14.6	21.9	29.2	36.5	43.8	51.0	58.3	65.6	72.9	80.2
7. 0	5. 0	5. 0	7.4	14.8	22.2	29.6	37.0	44.4	51.9	59.3	66.7	74.1	81.5
6.40	5.20	5.20	7.5	15.0	22.4	29.9	37.4	44.9	52.3	59.8	67.3	74.8	82.2
6.20	5.40	5.40	7.5	15.0	22.5	30.0	37.5	45.0	52.5	60.0	67.5	75.0	82.5
6. 0	6. 0	6. 0	7.5	15.0	22.5	30.0	37.5	45.0	52.5	60.0	67.5	75.0	82.5

Time after Noon or Midnight.			Second Difference.												
			10''	20''	30''	40''	50''	1''	2''	3''	4''	5''	6''	7''	8''	9''
h.	m.	h. m.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12. 0	0. 0	0. 0	0.1	0.1	0.2	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
11.50	0.10	0.10	0.1	0.3	0.4	0.5	0.7	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
11.40	0.20	0.20	0.2	0.4	0.6	0.8	1.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.2
11.30	0.30	0.30	0.3	0.5	0.8	1.0	1.3	0.0	0.1	0.1	0.1	0.1	0.2	0.2	0.2
11.20	0.40	0.40	0.3	0.6	1.0	1.3	1.6	0.0	0.1	0.1	0.1	0.2	0.2	0.3	0.3
11.10	0.50	0.50	0.4	0.8	1.1	1.5	1.9	0.0	0.1	0.1	0.1	0.2	0.2	0.3	0.3
11. 0	1. 0	1. 0	0.4	0.9	1.3	1.8	2.2	0.0	0.1	0.1	0.2	0.2	0.3	0.3	0.4
10.50	1.10	1.10	0.5	1.0	1.5	2.0	2.5	0.0	0.1	0.1	0.2	0.2	0.3	0.4	0.4
10.40	1.20	1.20	0.5	1.1	1.6	2.2	2.7	0.0	0.1	0.2	0.2	0.3	0.3	0.4	0.5
10.30	1.30	1.30	0.6	1.2	1.8	2.4	3.0	0.1	0.1	0.2	0.2	0.3	0.4	0.5	0.5
10.20	1.40	1.40	0.6	1.3	1.9	2.6	3.2	0.1	0.1	0.2	0.3	0.3	0.4	0.5	0.6
10.10	1.50	1.50	0.7	1.4	2.1	2.8	3.5	0.1	0.1	0.2	0.3	0.3	0.4	0.5	0.6
10. 0	2. 0	2. 0	0.7	1.5	2.2	3.0	3.7	0.1	0.1	0.2	0.3	0.4	0.4	0.5	0.7
9.50	2.10	2.10	0.8	1.6	2.3	3.1	3.9	0.1	0.2	0.2	0.3	0.4	0.5	0.6	0.7
9.40	2.20	2.20	0.8	1.6	2.5	3.3	4.1	0.1	0.2	0.2	0.3	0.4	0.5	0.6	0.7
9.30	2.30	2.30	0.9	1.7	2.6	3.5	4.3	0.1	0.2	0.3	0.3	0.4	0.5	0.6	0.8
9.20	2.40	2.40	0.9	1.8	2.7	3.6	4.5	0.1	0.2	0.3	0.4	0.4	0.5	0.6	0.8
9.10	2.50	2.50	0.9	1.9	2.8	3.8	4.7	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8
9. 0	3. 0	3. 0	1.0	1.9	2.9	3.9	4.9	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.9
8.50	3.10	3.10	1.0	2.0	3.0	4.0	5.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.9
8.40	3.20	3.20	1.0	2.1	3.1	4.1	5.2	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.9
8.30	3.30	3.30	1.1	2.1	3.2	4.2	5.3	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.9
8.20	3.40	3.40	1.1	2.2	3.3	4.3	5.4	0.1	0.2	0.3	0.4	0.5	0.6	0.8	1.0
8.10	3.50	3.50	1.1	2.2	3.3	4.3	5.4	0.1	0.2	0.3	0.4	0.5	0.6	0.8	1.0
8. 0	4. 0	4. 0	1.2	2.3	3.5	4.6	5.8	0.1	0.2	0.3	0.5	0.6	0.7	0.8	1.0
7.40	4.20	4.20	1.2	2.4	3.6	4.8	5.9	0.1	0.2	0.4	0.5	0.6	0.7	0.8	1.0
7.20	4.40	4.40	1.2	2.4	3.6	4.9	6.1	0.1	0.2	0.4	0.5	0.6	0.7	0.8	1.0
7. 0	5. 0	5. 0	1.2	2.4	3.7	4.9	6.2	0.1	0.2	0.4	0.5	0.6	0.7	0.8	1.1
6.40	5.20	5.20	1.3	2.5	3.8	5.0	6.2	0.1	0.2	0.4	0.5	0.6	0.7	0.9	1.1
6.20	5.40	5.40	1.3	2.5	3.8	5.0	6.3	0.1	0.2	0.4	0.5	0.6	0.7	0.9	1.1
6. 0	6. 0	6. 0	1.3	2.5	3.8	5.0	6.3	0.1	0.2	0.4	0.5	0.6	0.7	0.9	1.1

(z 3) Mean Motion of the Sun's Right Ascension for Sidereal Hours.

Hours.	Motion.		Minutes.	Motion.		Minutes.	Motion.		Seconds.	Motion.	
1	0	9.83	1	0	16	31	5	08	3	0	01
2	0	19.66	2	0	33	32	5	24	6	0	02
3	0	29.49	3	0	49	33	5	41	9	0	02
4	0	39.32	4	0	65	34	5	57	12	0	03
5	0	49.15	5	0	82	35	5	73	15	0	04
6	0	58.98	6	0	98	36	5	90	18	0	05
7	1	8.81	7	1	15	37	6	06	21	0	06
8	1	18.64	8	1	31	38	6	22	24	0	06
9	1	28.46	9	1	47	39	6	39	27	0	07
10	1	38.29	10	1	64	40	6	55	30	0	08
11	1	48.12	11	1	80	41	6	72	33	0	09
12	1	57.95	12	1	97	42	6	88	36	0	10
13	2	7.78	13	2	13	43	7	04	39	0	11
14	2	17.61	14	2	29	44	7	21	42	0	11
15	2	27.44	15	2	46	45	7	37	45	0	12
16	2	37.27	16	2	62	46	7	54	48	0	13
17	2	47.10	17	2	78	47	7	70	51	0	14
18	2	56.93	18	2	95	48	7	86	54	0	15
19	3	6.76	19	3	11	49	8	03	57	0	16
20	3	16.59	20	3	28	50	8	19	60	0	16
21	3	26.42	21	3	44	51	8	35			
22	3	36.25	22	3	60	52	8	51			
23	3	46.08	23	3	77	53	8	68			
24	3	55.91	24	3	93	54	8	85			
25	4	5.74	25	4	10	55	9	01			
26	4	15.57	26	4	26	56	9	17			
27	4	25.40	27	4	42	57	9	34			
28	4	35.22	28	4	59	58	9	50			
29	4	45.05	29	4	75	59	9	67			
30	4	54.88	30	4	91	60	9	83			

(z 4) Correction of Mean Refraction.

AA	Bar.	Ther.	AA	Bar.	Ther.	AA	Bar.	Ther.	AA	Bar.	Ther.	AA	Bar.	Ther.
	+1 in.	+10°		+1 in.	+10°		+1 in.	+10°		+1 in.	+10°		+1 in.	+10°
°	+	—	°	+	—	°	+	—	°	+	—	°	+	—
5	20.10	13.80	23	4.57	2.76	41	2.24	1.34	59	1.17	0.70	77	0.45	0.27
6	17.20	11.50	24	4.35	2.64	42	2.16	1.30	60	1.12	0.67	78	0.41	0.25
7	15.00	9.80	25	4.16	2.52	43	2.09	1.25	61	1.08	0.65	79	0.38	0.23
8	13.30	8.50	26	3.97	2.41	44	2.02	1.20	62	1.04	0.62	80	0.34	0.21
9	11.90	7.60	27	3.81	2.30	45	1.94	1.17	63	0.99	0.60	81	0.31	0.18
10	10.80	6.90	28	3.65	2.19	46	1.88	1.12	64	0.95	0.57	82	0.27	0.16
11	9.80	6.00	29	3.50	2.09	47	1.81	1.08	65	0.91	0.55	83	0.24	0.14
12	9.00	5.56	30	3.36	2.01	48	1.75	1.04	66	0.87	0.52	84	0.20	0.12
13	8.30	5.09	31	3.23	1.93	49	1.69	1.01	67	0.83	0.50	85	0.17	0.10
14	7.70	4.69	32	3.11	1.86	50	1.63	0.97	68	0.79	0.47	86	0.14	0.08
15	7.18	4.39	33	2.99	1.79	51	1.58	0.94	69	0.75	0.45	87	0.10	0.06
16	6.73	4.11	34	2.88	1.73	52	1.52	0.90	70	0.71	0.43	88	0.07	0.04
17	6.31	3.86	35	2.78	1.67	53	1.47	0.88	71	0.67	0.40	89	0.03	0.02
18	5.98	3.62	36	2.68	1.61	54	1.41	0.85	72	0.63	0.38			
19	5.61	3.40	37	2.58	1.55	55	1.36	0.82	73	0.59	0.36			
20	5.31	3.22	38	2.49	1.49	56	1.31	0.79	74	0.56	0.33			
21	5.04	3.05	39	2.40	1.44	57	1.26	0.76	75	0.52	0.31			
22	4.79	2.90	40	2.32	1.39	58	1.22	0.73	76	0.48	0.29			
	—	+		—	+		—	+		—	+		—	+
AA	Bar.	Ther.	AA	Bar.	Ther.	AA	Bar.	Ther.	AA	Bar.	Ther.	AA	Bar.	Ther.
	—1 in.	—10°		—1 in.	—10°		—1 in.	—10°		—1 in.	—10°		—1 in.	—10°

No. 2.—For Correction of the Mean Refraction.
(Thermometer 50°, and Barometer 30 inches.)

Apparent Altitude.	THERMOMETER.										BAROMETER.				
	Additive.					Subtractive.					Subtractive.				
	10°	20°	30°	40°	50°	60°	70°	80°	90°	100°	29.0	29.5	30.0	30.5	30
40	55	35	25	15	5	11	25	35	45	55	11	35	25	15	5
20	53	38	27	12	0	11	21	32	43	52	11	33	22	11	0
40	50	36	25	12	0	10	21	31	41	50	10	32	21	10	0
5 0	48	35	23	11	0	10	20	30	39	48	10	30	20	10	0
20	46	34	22	11	0	10	19	29	38	46	9	29	19	9	0
40	44	32	21	10	0	9	19	28	37	45	9	27	18	9	0
6 0	42	31	20	10	0	9	18	27	35	44	8	25	17	8	0
20	40	30	19	10	0	8	18	26	34	41	8	24	16	8	0
40	39	29	18	9	0	8	17	25	32	40	8	23	16	8	0
7 0	37	28	18	9	0	8	16	24	31	38	8	22	15	7	0
30	35	26	17	8	0	8	15	23	30	36	7	21	14	7	0
8 0	34	25	16	8	0	7	15	22	28	35	7	20	13	7	0
9 0	31	22	15	7	0	7	13	20	26	31	6	18	12	6	0
10°	28	20	18	6	0	6	12	18	23	29	5	16	11	6	0
11	26	19	12	6	0	6	10	17	22	27	5	15	10	6	0
12	24	17	11	5	0	5	9	15	20	24	4	14	9	5	0
13	22	16	10	5	0	5	9	14	19	23	4	13	8	5	0
14	21	15	10	4	0	4	8	13	17	21	4	12	8	4	0
15	19	14	9	4	0	4	8	12	16	20	4	11	7	4	0
16	18	14	9	4	0	4	7	11	15	19	4	10	7	4	0
17	16	12	8	3	0	3	6	11	14	17	4	9	6	3	0
20	14	11	7	3	0	3	6	9	12	15	4	8	5	3	0
23	13	10	6	3	0	3	5	8	11	13	4	7	4	3	0
25	12	9	6	2	0	2	4	8	10	12	4	6	4	3	0
30	9	7	4	2	0	2	3	6	8	9	3	5	3	2	0
35	8	6	4	2	0	2	3	5	7	8	3	4	3	2	0
40	6	5	3	2	0	1	3	4	5	7	3	3	2	1	0
45	5	4	3	1	0	1	2	4	5	6	3	2	2	1	0
50	4	3	2	1	0	1	2	3	4	5	3	2	2	1	0
55	4	3	2	1	0	1	2	3	3	4	3	2	2	1	0
60	3	2	2	1	0	1	2	2	3	3	2	2	1	1	0
65	3	2	1	1	0	1	1	2	2	2	2	1	1	0	0
70	2	1	1	0	0	0	1	1	2	2	1	1	1	0	0
75	1	1	1	0	0	0	1	1	1	2	1	1	1	0	0
80	1	1	0	0	0	0	0	1	1	1	1	1	1	0	0
											Additive.				
											31.5	31.0	30.5	30	

Correction of Auxiliary Angle for Thermometer and Barometer.

Apparent Altitude.	Factor.	Apparent Altitude.	Factor.	Apparent Altitude.	Factor.	Apparent Altitude.	Factor.
0	.05	24	.25	44	.40	64	.52
4	.07	26	.26	46	.42	66	.53
8	.09	28	.28	48	.43	68	.53
10	.11	30	.30	50	.44	70	.54
12	.13	32	.32	52	.45	72	.54
14	.15	34	.33	54	.47	74	.55
16	.17	36	.36	56	.48	76	.57
18	.19	38	.38	58	.49	78	.57
20	.21	40	.37	60	.50	80	.58
22	.23	42	.39	62	.52		

N.B. To correct Auxiliary Angle, multiply the Factors answering to the Apparent Altitude of each body by the corrections from table for correcting Mean Refraction, and apply the products to the Auxiliary Angle the contrary way to that directed in the Table "For correction of Mean Refraction."

$$\text{Fahrenheit} = \text{Centigr.} \times \frac{9}{5} \pm 32^\circ = \text{Reaumur} \times \frac{9}{4} \pm 32^\circ.$$

THE LOG. DIFFERENCE.

☉ or *
(Log. cos. true alt. - log. cos. app. alt.) + (log. cos. true alt. - log. cos. app. alt.) + 6.801030.

Table (A a).—Moon's App. Alt. *less* than 10°. Barom. 30 inches. Therm. Fahrt. 50°.

☾ App. Alt.	Moon's Horizontal Parallax.								Diff. 1' Hor. Parx.	☾ App. Alt.
	54'	55'	56'	57'	58'	59'	60'	61'		
° 6	6.800349 120	800332 123	800315 125	800297 127	800280 129	800263 131	800246 134	800229 136	17	° 6
7	300229 120	300209 122	300190 124	300170 126	300151 129	300132 131	300112 133	300093 136	20	7
8	300109 120	300087 122	300065 124	300044 126	300022 128	300001 131	299979 133	299958 136	22	8
9	299989 119	299965 122	299941 124	299917 126	299894 127	299870 131	299846 133	299822 135	24	9

Table (A a).—Moon's App. Alt. *more* than 10°. Barom. 30 inches. Therm. Fahrt. 50°.

☾ App. Alt.	Moon's Horizontal Parallax.									Diff. 1' Hor. Parx.	☾ App. Alt.
	53'	54'	55'	56'	57'	58'	59'	60'	61'		
° 10	6.299897 118	9869 119	9843 121	9817 124	9791 125	9765 127	9739 130	9713 132	9687 134	26	° 10
11	9779 117	9751 119	9723 121	9694 123	9666 125	9638 127	9610 130	9582 132	9553 133	28	11
12	9662 116	9632 118	9601 120	9571 122	9541 124	9510 126	9480 129	9450 131	9420 133	30	12
13	9546 115	9514 117	9481 119	9449 122	9416 124	9384 126	9351 128	9318 129	9287 133	33	13
14	9431 115	9396 117	9361 119	9327 121	9292 123	9257 126	9223 128	9188 129	9154 133	35	14
15	6.299316 114	9279 117	9242 118	9205 121	9169 123	9132 125	9095 127	9058 129	9021 132	37	15
16	9201 113	9162 116	9124 118	9085 120	9046 122	9007 124	8968 127	8929 128	8890 131	39	16
17	9088 113	9047 116	9006 117	8965 120	8924 122	8882 123	8841 126	8800 128	8759 130	41	17
18	8974 112	8931 115	8888 116	8845 119	8802 121	8759 123	8715 125	8672 127	8629 129	43	18
19	8862 112	8817 114	8772 116	8726 118	8681 120	8636 122	8591 125	8545 126	8500 128	45	19
20	6.298750 111	8703 113	8656 115	8608 117	8561 119	8514 121	8466 123	8419 125	8372 127	48	20
21	8639 110	8590 112	8540 114	8491 116	8442 118	8392 120	8343 122	8294 124	8245 126	50	21
22	8529 109	8478 111	8426 113	8375 115	8323 117	8272 119	8221 121	8169 123	8118 125	52	22
23	8420 109	8366 110	8313 113	8259 114	8206 116	8153 119	8099 120	8046 123	7993 124	54	23
24	8311 107	8256 109	8200 112	8145 113	8090 115	8034 118	7979 120	7923 121	7868 125	56	24
25	6.298204 107	8146 108	8089 111	8031 112	7974 114	7916 116	7859 119	7802 120	7745 123	58	25
26	8097 106	8038 108	7978 110	7919 111	7859 113	7800 115	7740 117	7681 119	7622 122	60	26
27	7991 104	7930 107	7869 109	7807 110	7746 112	7684 114	7623 116	7562 118	7500 120	61	27
28	7887 104	7823 106	7760 107	7697 109	7633 111	7570 113	7507 115	7443 116	7380 119	63	28
29	7783 103	7718 105	7653 107	7588 109	7522 110	7457 113	7392 115	7327 116	7261 118	65	29
30	6.297680	7613	7546	7479	7412	7344	7277	7210	7143	67	30

Alt. 5° 6° 7° 8° 9° 10° 12° 14° 16° 19° 21° 26° 30° 34° 38° 42° 46° 52° 58° 64° 70° 76° 82° 88° Alt.
☉ Corr. 14 18 20 21 22 23 23 23 23 22 21 20 19 18 17 16 15 14 13 13 12 12 11 ☉ Corr.
* Corr. 16 20 22 24 25 26 27 28 29 29 30 30 30 30 30 30 30 30 30 30 30 30 * Corr.

THE LOG. DIFFERENCE.

Table (Aa).—Moon's Alt. more than 30°. Barom. 30 inches. Therm. Fahr. 50°.

App. Alt.	Moon's Horizontal Parallax.										Diff. 1' Par.	App. Alt.
	53'	54'	55'	56'	57'	58'	59'	60'	61'			
30	6.297880	7813	7546	7479	7412	7345	7277	7210	7143	67	30	
	101	104	105	107	109	110	112	114	116			
31	7579	7510	7441	7372	7303	7234	7165	7096	7027	71	31	
	100	103	104	105	108	109	111	114	116			
32	7478	7407	7336	7265	7195	7124	7053	6982	6911	71	32	
	99	101	103	104	107	108	110	113	115			
33	7379	7308	7233	7160	7088	7015	6942	6869	6796	73	33	
	99	100	103	103	106	107	109	110	112			
34	7280	7206	7131	7057	6982	6908	6833	6758	6684	75	34	
	97	99	100	102	104	106	108	110	112			
35	6.297183	7107	6931	6854	6878	6802	6725	6649	6572	77	35	
	95	98	99	101	103	105	106	108	110			
36	7088	7009	6931	6853	6775	6697	6619	6541	6463	78	36	
	94	96	98	100	102	103	105	107	109			
37	6993	6913	6833	6753	6673	6594	6514	6434	6354	80	37	
	93	95	97	98	100	102	104	106	108			
38	6900	6818	6736	6655	6573	6492	6410	6328	6246	82	38	
	92	94	95	97	99	101	102	103	106			
39	6807	6724	6641	6558	6474	6391	6308	6225	6141	84	39	
	91	92	94	96	97	99	101	102	104			
40	6.296717	6632	6547	6462	6377	6292	6207	6122	6037	85	40	
	89	91	93	94	96	97	99	101	103			
41	6638	6541	6455	6368	6281	6195	6108	6021	5934	87	41	
	88	89	91	93	94	96	98	99	100			
42	6540	6452	6363	6275	6187	6099	6010	5922	5833	89	42	
	86	88	89	91	93	95	96	98	98			
43	6454	6364	6274	6184	6094	6004	5914	5825	5735	90	43	
	85	87	88	90	91	93	94	97	97			
44	6369	6277	6186	6094	6003	5911	5820	5728	5638	91	44	
	84	85	87	88	90	91	93	95	96			
45	6.296285	6192	6099	6006	5913	5820	5727	5634	5542	93	45	
	82	83	85	86	88	89	91	92	94			
46	6203	6109	6014	5920	5825	5731	5636	5542	5448	95	46	
	80	82	83	85	86	88	89	91	93			
47	6123	6027	5931	5835	5739	5643	5547	5451	5355	96	47	
	79	81	82	84	85	87	88	90	90			
48	6044	5946	5849	5751	5654	5556	5459	5361	5265	97	48	
	78	79	80	81	83	85	86	87	89			
49	5966	5867	5769	5670	5571	5472	5373	5274	5176	99	49	
	76	77	79	80	82	83	84	86	87			
50	6.295891	5790	5690	5590	5489	5389	5289	5188	5089	100	50	
	75	75	77	78	79	81	83	83	85			
51	5818	5715	5613	5511	5410	5308	5206	5105	5004	101	51	
	72	74	76	76	78	79	80	82	84			
52	5744	5641	5538	5435	5332	5229	5126	5023	4920	103	52	
	71	73	74	75	77	78	79	80	82			
53	5673	5568	5464	5360	5255	5151	5047	4943	4838	104	53	
	69	70	71	73	74	75	77	77	80			
54	5604	5499	5394	5287	5182	5076	4971	4865	4758	106	54	
	68	69	70	71	73	74	76	77	77			
55	6.295596	5429	5323	5216	5109	5002	4895	4788	4681	107	55	
	66	67	69	70	71	72	73	74	75			
56	5470	5362	5254	5146	5038	4930	4822	4714	4605	108	56	
	64	65	66	67	69	70	71	72	73			
57	5407	5297	5188	5079	4969	4860	4751	4642	4533	109	57	
	63	63	65	66	66	68	69	71	72			
58	5344	5234	5123	5013	4903	4792	4682	4571	4461	110	58	
	60	62	62	64	65	66	67	68	69			
59	5284	5172	5061	4949	4839	4728	4615	4503	4392	111	59	
	59	59	61	62	63	64	66	66	67			
60	6.295225	5113	5000	4887	4775	4662	4549	4437	4325	112	60	

Alt. 5° 6° 7° 8° 9° 10° 12° 14° 16° 18° 21° 26° 30° 34° 38° 42° 46° 52° 58° 64° 70° 76° 82° 88° Alt.
 ○ Corr. 14 18 20 21 22 23 23 23 23 23 22 21 20 19 18 17 16 15 14 13 13 12 12 11 ○ Corr.
 • Corr. 16 20 22 24 25 26 27 28 29 29 30 30 30 30 30 30 30 30 30 30 30 30 30 • Corr.

THE LOG. DIFFERENCE.

Table (A a).—Moon's Alt. more than 60°. Barom. 30 inches. Therm. Fahrt. 50°.

☾ App. Alt.	Moon's Horizontal Parallax.									Diff. 1' Parx.	☾ App. Alt.
	53'	54'	55'	56'	57'	58'	59'	60'	61'		
• 60	6.295225	5113	5000	4887	4775	4662	4549	4437	4325	112	° 60
	57	58	59	60	61	62	63	64	65		
61	5168	5055	4941	4827	4714	4600	4486	4373	4260	113	61
	55	56	57	58	59	60	61	63	64		
62	5113	4999	4884	4769	4655	4540	4425	4310	4196	115	62
	53	55	56	56	58	59	59	60	62		
63	5060	4944	4828	4713	4597	4481	4366	4250	4134	116	63
	51	52	53	54	55	56	57	58	59		
64	5009	4892	4776	4659	4542	4426	4309	4192	4075	117	64
	50	51	52	53	53	55	55	56	57		
65	6.294959	4841	4724	4606	4489	4371	4254	4136	4018	118	65
	48	49	50	51	52	53	53	53	54		
66	4912	4793	4675	4556	4438	4320	4201	4083	3964	119	66
	46	46	47	48	49	50	51	52	53		
67	4866	4747	4628	4508	4389	4270	4150	4031	3911	120	67
	43	44	45	46	47	48	48	49	50		
68	4823	4703	4583	4462	4342	4222	4102	3982	3861	120	68
	42	43	44	44	44	45	46	47	47		
69	4781	4660	4539	4418	4298	4177	4056	3935	3814	121	69
	40	40	41	41	43	44	44	45	45		
70	6.294741	4620	4498	4377	4255	4133	4012	3890	3769	121	70
	37	39	39	40	41	41	42	42	43		
71	4704	4581	4459	4337	4214	4092	3970	3848	3726	122	71
	36	36	37	38	38	39	40	41	42		
72	4668	4545	4422	4299	4176	4053	3930	3807	3684	123	72
	34	34	35	36	36	37	38	38	38		
73	4634	4510	4387	4263	4140	4016	3892	3769	3646	123	73
	32	32	33	33	35	35	35	36	37		
74	4602	4478	4354	4230	4105	3981	3857	3733	3609	124	74
	30	30	31	32	32	32	33	34	35		
75	6.294572	4448	4323	4198	4073	3949	3824	3699	3574	125	75
	28	29	29	29	30	31	31	31	31		
76	4544	4419	4294	4169	4043	3918	3793	3668	3543	125	76
	25	26	27	28	27	28	29	29	30		
77	4519	4393	4267	4141	4016	3890	3764	3639	3513	126	77
	24	24	24	25	26	26	26	27	27		
78	4495	4369	4243	4116	3990	3864	3738	3612	3486	126	78
	22	22	23	22	23	24	24	25	25		
79	4473	4347	4220	4094	3967	3840	3714	3587	3461	127	79
	20	20	20	21	21	21	22	22	23		
80	6.294453	4327	4200	4073	3946	3819	3692	3565	3438	127	80
	17	18	19	19	19	19	19	20	20		
81	4436	4309	4181	4054	3927	3800	3673	3545	3418	127	81
	16	16	16	16	16	17	17	17	17		
82	4420	4293	4166	4038	3911	3783	3656	3528	3401	128	82
	13	14	15	15	15	15	16	16	16		
83	4407	4279	4151	4024	3896	3768	3640	3513	3386	128	83
	11	11	11	11	12	12	12	13	14		
84	4396	4268	4140	4013	3884	3756	3628	3500	3372	128	84
	10	10	10	11	10	10	11	11	11		
85	6.294386	4258	4130	4002	3874	3746	3617	3489	3361	128	85
	7	8	8	8	8	8	8	8	8		
86	4379	4250	4122	3994	3866	3738	3609	3481	3353	128	86
	5	5	5	5	6	6	6	6	6		
87	4374	4245	4117	3989	3860	3732	3603	3475	3347	129	87
	3	3	3	4	3	3	3	3	3		
88	4371	4242	4114	3985	3857	3729	3600	3472	3344	129	88
	1	1	1	1	1	1	1	2	2		
89	4370	4241	4113	3984	3856	3727	3599	3470	3342	129	89

Alt. 5° 6° 7° 8° 9° 10° 12° 14° 16° 19° 21° 26° 30° 34° 38° 42° 46° 52° 58° 64° 70° 76° 82° 88° Alt.
☉ Corr. 14 18 20 21 22 23 23 23 23 23 22 21 20 19 18 17 16 15 14 13 13 12 12 11 ☉ Corr.
* Corr. 16 20 22 24 25 26 27 28 29 29 30 30 30 30 30 30 30 30 30 30 30 30 30 * Corr

Table (B b). For correcting Log. Differences for Minutes of Altitude and Seconds

Diff. 1° Alt. or 1' Par.	Minutes of Moon's Altitude or Seconds																							
	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48
14	14	13	12	12	13	11	11	10	10	9	9	8	8	7	7	7	6	6	5	5	4	4	3	3
16	15	15	14	14	14	13	12	12	11	11	10	10	9	9	8	8	7	7	6	5	5	4	4	3
18	17	17	16	16	15	14	14	13	13	12	11	11	10	10	9	8	8	7	7	6	5	5	4	4
20	19	19	18	17	17	16	15	15	14	13	13	12	11	11	10	9	9	8	7	7	6	5	5	4
22	21	21	20	19	18	18	17	16	15	15	14	13	12	12	11	10	10	9	8	7	7	6	5	4
24	23	22	21	21	20	19	18	18	17	16	15	14	14	13	12	11	10	10	9	8	7	6	5	4
26	25	24	23	23	22	21	20	19	18	17	16	16	15	14	13	12	11	10	9	8	7	6	5	4
28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4
30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6
32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8
34	33	32	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9
36	35	34	33	31	30	29	28	26	25	24	23	22	20	19	18	17	16	15	14	13	12	11	10	9
38	37	35	34	33	32	30	29	28	27	25	24	23	22	20	19	18	16	15	14	13	11	10	9	8
40	39	37	36	35	33	32	31	29	28	27	25	24	23	21	20	19	17	16	15	13	12	11	9	8
42	41	39	38	36	35	34	32	31	29	28	27	25	24	22	21	20	18	17	15	14	13	11	10	9
44	43	41	39	38	37	35	34	32	31	29	28	26	25	23	22	21	19	18	16	15	13	12	10	9
46	44	43	41	40	38	37	35	34	32	31	29	28	26	25	23	21	20	18	17	15	14	12	11	9
48	46	45	43	42	40	38	37	35	34	32	30	29	27	26	24	22	21	19	18	16	14	13	11	10
50	47	45	43	42	40	38	37	35	33	32	30	28	27	25	23	22	20	18	17	15	13	12	10	9
52	50	49	47	45	43	42	40	38	36	34	33	31	29	28	26	24	23	21	19	17	16	14	12	10
54	52	50	48	47	45	43	41	39	38	36	34	32	31	29	27	25	23	22	20	18	16	14	13	11
56	54	52	50	48	47	45	43	40	39	37	35	34	32	30	28	26	24	22	21	19	17	15	13	11
58	56	54	52	50	48	46	44	43	41	38	37	35	33	31	29	27	25	23	21	19	17	15	14	12
60	58	56	54	52	50	48	46	44	42	40	38	36	34	32	30	28	26	24	22	20	18	16	14	12
62	60	58	56	54	52	50	48	45	43	41	39	37	35	33	31	29	27	25	23	21	19	17	14	12
64	62	60	57	55	53	51	49	47	45	43	41	38	36	34	32	30	28	26	23	21	19	17	15	13
66	64	62	59	57	55	53	51	48	46	44	42	40	37	35	33	31	29	26	24	22	20	18	15	13
68	66	63	61	59	57	54	52	50	48	45	43	41	39	36	34	32	29	27	25	23	20	18	16	14
70	68	65	63	61	58	56	54	52	49	47	44	42	40	37	35	33	30	28	26	23	21	19	16	14
72	70	67	65	62	60	58	55	53	50	48	46	43	41	38	36	34	31	29	26	24	22	19	17	14
74	72	69	66	64	62	59	57	54	52	49	47	44	42	39	37	35	32	30	27	25	22	20	17	15
76	73	71	68	66	63	61	58	56	53	51	48	46	43	41	38	35	33	30	28	25	23	20	18	15
78	75	73	70	68	65	62	60	57	55	52	49	47	44	42	39	36	34	31	29	26	23	21	18	16
80	77	75	72	69	67	64	61	59	56	53	51	48	45	43	40	37	35	32	29	27	24	21	19	16
82	79	77	74	71	68	66	63	60	57	55	52	49	46	44	41	38	36	33	30	27	25	22	19	16
84	81	78	75	73	70	67	64	62	59	56	53	50	48	45	42	39	36	34	31	28	25	22	20	17
86	83	80	77	75	72	69	66	63	60	57	54	52	49	46	43	40	37	34	32	29	26	23	20	17
88	85	82	79	76	73	70	67	65	62	59	56	53	50	47	44	41	38	35	32	29	26	23	21	18
90	87	84	81	78	75	72	69	66	63	60	57	54	51	48	45	42	39	36	33	30	27	24	21	18
92	89	86	83	80	77	74	71	67	64	61	58	55	52	49	46	43	40	37	34	31	28	25	21	18
94	91	88	84	81	78	75	72	69	66	63	60	56	53	50	47	44	41	38	34	31	28	25	22	19
96	93	90	86	83	80	77	74	70	67	64	61	58	54	51	48	45	42	39	35	32	29	26	22	19
98	95	91	88	85	82	78	75	72	69	65	62	59	56	52	49	46	42	39	36	33	29	26	23	20
100	97	93	90	87	83	80	77	73	70	67	63	60	57	53	50	47	43	40	37	33	30	27	23	20
102	99	95	92	88	85	82	78	75	71	68	65	61	58	54	51	48	44	41	37	34	31	27	24	20
104	101	97	93	90	87	83	80	76	73	69	66	62	59	56	52	49	45	42	38	35	31	28	24	21
106	102	99	95	92	89	85	81	78	74	71	67	64	60	57	53	49	46	42	39	35	32	28	25	21
108	104	101	97	94	90	86	83	79	76	72	68	65	61	57	54	50	47	43	40	36	32	29	25	22
110	106	103	99	95	92	88	84	81	77	73	70	66	62	59	55	51	48	44	40	37	33	29	26	23
112	108	105	101	97	93	90	86	82	78	75	71	67	63	60	56	52	49	45	41	37	34	30	26	22
114	110	106	102	99	95	91	87	84	80	76	72	68	65	61	57	53	49	46	42	38	34	30	27	23
116	112	108	104	100	97	93	89	85	81	77	73	70	66	62	58	54	50	46	43	39	35	31	27	23
118	114	110	106	102	98	94	90	87	83	79	75	71	67	63	59	55	51	47	43	39	35	31	28	24
120	116	112	108	104	100	96	92	88	84	80	76	72	68	64	60	56	52	48	44	40	36	32	28	24
122	118	114	110	106	102	98	94	89	85	81	77	73	69	65	61	57	53	49	45	41	37	33	29	25
124	120	116	111	107	103	99	95	91	87	83	79	74	70	66	62	58	54	50	45	41	37	33	29	25
126	122	118	113	109	105	101	97	92	88	84	80	76	71	67	63	59	55	50	46	42	38	34	29	25
128	124	119	115	111	107	102	98	94	90	85	81	77	73	68	64	60	55	51	47	43	38	34	30	26
130	126	121	117	113	108	104	100	95	91	87	82	78	74	69	65	61	56	52	48	43	39	35	30	26
132	128	123	119	114	110	105	101	97	92	88	84	79	75	70	66	62	57	53	48	44	40	35	31	26
134	130	125	120	116	112	107	103	98	94	89	85	80	76	71	67	63	58	54	49	45	40	36	31	27
136	132	127	122	118	113	109	104	100	95	91	86	82	77	72	68	64	59	54	50	45	41	36	32	27

of Parallax (both additive).

of Parallax.						Diff. 1° Alt. or 1' Par.
50	52	54	56	58	60	
2	2	1	1	0	0	14
3	2	2	1	1	0	16
3	2	2	1	1	0	18
3	3	2	1	1	0	20
4	3	2	1	1	0	22
4	3	2	2	1	0	24
4	3	3	2	1	0	25
5	4	3	2	1	0	28
5	4	3	2	1	0	30
5	4	3	3	2	1	32
6	5	3	3	2	1	34
6	5	4	3	2	1	36
6	5	4	3	1	1	38
7	5	4	3	1	1	40
7	6	4	3	1	1	42
7	6	4	3	1	1	44
8	6	5	3	2	1	46
8	6	5	3	2	1	48
8	7	5	3	2	1	50
9	7	5	3	2	1	52
9	7	6	4	2	1	54
9	7	6	4	2	1	56
10	8	6	4	2	1	58
10	8	6	4	2	1	60
10	8	6	4	2	1	62
11	9	6	4	2	1	64
11	9	7	4	2	1	66
11	9	7	5	2	1	68
12	9	7	5	2	1	70
12	10	7	5	2	1	72
12	10	7	5	2	1	74
13	10	8	5	3	1	76
13	10	8	5	3	1	78
13	11	8	5	3	1	80
14	11	8	5	3	1	82
14	11	8	6	3	1	84
14	11	9	6	3	1	86
15	12	9	6	3	1	88
15	12	9	6	3	1	90
15	12	9	6	3	1	92
16	13	9	6	3	2	94
16	13	10	6	3	2	96
16	13	10	7	3	2	98
17	13	10	7	3	2	100
17	14	10	7	3	2	102
17	14	10	7	3	2	104
18	14	11	7	4	2	106
18	14	11	7	4	2	108
18	15	11	7	4	2	110
19	15	11	7	4	2	112
19	15	11	8	4	2	114
19	15	12	8	4	2	116
20	16	12	8	4	2	118
20	16	12	8	4	2	120
20	16	12	8	4	2	122
21	17	12	8	4	2	124
21	17	13	8	4	2	126
21	17	13	9	4	2	128
22	17	13	9	4	2	130
22	18	13	9	4	2	132
22	18	13	9	4	2	134
23	18	14	9	5	2	136

Table (Cc). For correcting Log. Difference for Planet's Altitude.

# App. Alt.	Planet's Horizontal Parallax.															
	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	22"	24"	26"	28"	30"	32"
7	21	20	20	20	19	18	17	17	16	15	15	14	14	14	13	13
8	23	22	22	21	20	20	19	19	18	17	17	16	15	15	15	14
9	24	23	23	22	21	21	20	19	19	18	18	17	16	15	15	14
10	25	24	23	23	22	21	21	20	19	18	17	17	16	15	15	14
12	26	25	24	23	23	22	21	20	19	18	17	16	16	15	14	13
14	27	26	25	24	23	22	22	21	20	19	18	17	16	15	14	13
16	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12
18	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12
22	28	26	24	23	21	20	18	17	15	14	13	12	10	9	7	6
26	28	26	24	22	20	18	17	15	13	11	9	7	5	4	2	1
30	27	25	23	21	19	17	15	13	11	9	6	4	3	0	2	4
35	27	25	23	21	19	17	15	13	11	8	5	3	1	4	6	8
40	27	24	22	19	16	14	11	8	5	3	0	8	5	8	11	13
45	27	24	21	18	15	12	9	5	3	1	2	6	9	12	15	18
50	27	24	20	17	14	11	7	4	1	2	5	9	12	15	18	22
60	26	23	19	15	12	8	4	1	8	7	10	14	17	21	25	28
70	26	22	18	14	10	6	2	2	6	10	13	17	21	25	29	33
80	26	22	18	13	9	5	1	3	7	11	15	20	24	28	32	36

The corrections above the black line are additive, and those below subtractive.

Table (Dd). For correcting Log. Difference for the Height of Thermometer and Barometer.

Alt. °	Factor.	Alt. °	Factor.
4	0.2	83	1.2
6	0.3	86	1.3
8	0.3	89	1.4
9	0.4	92	1.5
12	0.5	96	1.6
14	0.6	99	1.7
17	0.7	54	1.8
20	0.8	59	1.9
23	0.9	65	2.0
26	1.0	72	2.1
29	1.1	90	2.1

N.B. To correct Log. Diff., multiply the factors answering to the app. alt. of each body by the corrections from "Table for correcting Mean Refraction," No. 2, page 380, and apply the products to the Log. Diff. as directed in the above No. 2 Table.



LATITUDES AND LONGITUDES OF PLACES ON THE SEABOARD, HARBOURS, CAPES, ISLANDS, REEFS, &c.

* *Light.* ** *Two or more Lights.* *** *Three Lights.*
S.M. Secondary Meridian.

DIRECTORY.

- I. **England, E. Long.**
Greenwich to Newhaven.
Nore to Spurn Head.
- II. **England, W. Long.**
Brighton—Land's-End—Bristol—Liverpool.
Berwick—Hull.
- III. **Scotland.** Edinburgh—Dundee—Aberdeen.
Orkneys—Shetlands—Faroes.
Pentland Skerries—Hebrides—Glasgow.
- IV. **Ireland.** Dublin—Wexford—Cork.
Cape Clear—Bantry—Valentia—Limerick.
Galway—Westport—Londonderry—Belfast.
- V. **North Coast of Europe, E. Long.**
Belgium—Holland—Denmark—Sweden—Norway.
- VI. **Baltic.**
Denmark—Prussia—Russia—Sweden.
- VII. **France.**
Calais—Cherbourg—Brest—Bordeaux.
Golfe du Lion—Toulon—Nice.
- VIII. **Spain.**
San Sebastian—Corunna—Oporto—Lisbon.
Cadiz—Gibraltar—Barcelona—Balearic Isles.
- IX. **Italy.** Genoa—Leghorn—Naples.
Sicily—Sardinia, with Corsica—Malta.
Gulf of Tarento—Ancona—Ravenna.

- X. **Austria—Greece—Turkey—South Russia.**
- XI. **Africa.** Egypt—Tunis—Algiers—Morocco.
West Coast, with Canaries.
East Coast, with Madagascar—Mauritius—Red Sea.
- XII. **Asia.** Turkey—Arabia—Persia.
- XIII. **Asia—continued.** India—China.
- XIV. **North Pacific.** Japan, and Islands above
Equator—West Coast of America, N. Lat.
- XV. **South Pacific.** Australia—Tasmania—
New Zealand.
- XVI. **South Pacific—continued.**
New Zealand—Polynesia—New Hebrides.
Java—Sumatra—Borneo.
- XVII. **North America.**
Newfoundland—Canada—Northern States.
- XVIII. **North America—continued.**
Southern States—Central America—West
Indies.
- XIX. **South America.**
Guatemala—Brazil—Windward and Leeward
Isles.
Patagonia—Chili—Peru.
- XX. **Arctic—Antarctic Oceans, &c.**

I. ENGLAND, E. Long.	Lat. N.	Long. E.
Greenwich Observatory	51 28.6	0 0
Greenhithe, Ferry	51 27.2	0 16.75
Sheerness, Flag-staff	51 26.8	0 44.75
Chatham, King's Stairs	51 23.8	0 35.0
Nore*	51 29	0 48
Margate,* Church	51 23.4	1 28.25
North Foreland*	51 22.5	1 26.75
Ramsgate, South Pier*	51 19.7	1 25.5
Sandown Castle	51 14.3	1 24.25
Goodwin,* Gong	51 19.5	1 35.5
Gull Stream,* Gong	51 16.6	1 29.5
Safety Beacon	51 14.7	1 33.75
South Sand Head, S. Point,* Gong	51 10.0	1 28.25
South Foreland**	51 8.4	1 22.5
Dover Castle*	51 7.8	1 19.5
Folkstone*	51 4.8	1 11.0
Dungeness*	50 55.0	0 58.0
Rye,** Church	50 57.0	0 43.5
Hastings**	50 51.5	0 36.0
Beechy Head*	50 44.4	0 12.75
Newhaven, West Pier*	50 47	0 4

ENGLAND, E. Long.	Lat. N.	Long. E.
Nore,* Gong	51 29	0 48
Maplin* S.E. Point, Bell	51 35	1 3
Inner Gabbard	51 56.8	1 56.0
Outer Gabbard	51 59.0	2 3.5
Walton Tower	51 51.8	1 17.2
Harwich**	51 56.6	1 17.5
Landguard Fort	51 56.3	1 19.2
Orford Steeple	52 5.7	1 32.2
Orfordness**	52 4.8	1 34.2
Aldborough Steeple	52 9.2	1 36.0
Southwold Church	52 19.7	1 40.7
Pakefield*	52 26.2	1 43.5
Lowestoff**	52 29.3	1 45.5
Yarmouth Spire	52 36.8	1 43.7
Winterton*	52 43.0	1 41.0
Hasborough Lights**	52 49.4	1 32.0
Cromer*	52 55.7	1 19.0
Hunstanton Point*	52 57.1	0 29.7
Lynn's Well*	53 1.7	0 25.0
Inner Dowsing, Beacon	53 18.4	0 33.2
Spurn Lights**	53 34.7	0 7.2

II. ENGLAND, W. Long.	Lat. N.	Long. W.	ENGLAND, W. Long.	Lat. N.	Long. W.
London, St. Paul's Cathedral....	51 30.8	0 5.75	Point of Air,* Bell.....	53 21.9	3 19.0
Brighton Pier*.....	50 49	0 8	N.W.* Light, Bell, Blue Lights.	53 27.4	3 17.75
Shoreham**.....	50 50.3	0 16.0	Formby* Light.....	53 31.0	3 9.5
Selsea Bill, High House.....	50 43.8	0 48.5	Hoylelake**.....	53 23.7	3 11.7
Portsmouth Royal Naval College	50 48.0	1 6.25	Bell Beacon.....	53 31.2	3 15.5
Bembridge,* Gong.....	50 42	1 2	Bidston* Light.....	53 24.1	3 4.75
Cowes Castle.....	50 46.0	1 17.75	Leasowe* Light.....	53 24.9	3 7.75
St. Catherine's Point*.....	50 34.5	1 18.0	Black Rock* Light, Bell.....	53 26.7	3 2.75
Needles Light*.....	50 39.9	1 34.0	Liverpool, St. Paul's.....	53 24.6	2 59.5
Southampton, St. Michael's Spire.	50 54	1 24.25	Liverpool Observatory.....	53 24.8	3 0.0
Hurst**.....	50 42.4	1 32.75	Crosby* Light.....	53 31.0	3 4.0
Christchurch.....	50 43.9	1 44.25	Formby, S.E. mark.....	53 32.3	3 4.0
Poole, Branksea Castle.....	50 41.7	1 58.0	Rossall, sea mark.....	53 55.2	3 3.0
St. Alban's Head.....	50 35	2 8	Wyre,* Bell.....	53 57.3	3 1.75
Weymouth,* Jetty Fort.....	50 36.6	2 26.0	Fleetwood**.....	53 55.6	3 1.0
Portland**.....	50 31.4	2 26.75	Lancaster Castle.....	54 3.0	2 48.25
Bridport.....	50 42.7	2 44.5	Walney Isle, South Point*.....	54 2.9	3 10.5
Exmouth.....	50 37	3 23	Isle of Man, Black Comb, 1,919 ft.	54 15.5	3 19.5
Torquay*.....	50 28	3 80	South Point, Calf**.....	54 3.2	4 50.0
Berry Head, Flag-staff.....	50 24	3 28	Castleton*.....	54 4.4	4 39.0
Dartmouth*.....	50 21	3 33	Douglas*.....	54 9.0	4 28.0
Start Point*.....	50 13.4	3 38	North Point, Ayr Point*.....	54 25.0	4 22.0
Prawle Point.....	50 12	3 43	Peel*.....	54 13.6	4 42.0
Salcombe, Fort Charles.....	50 19.3	3 48.0	St. Bees Head*.....	54 30.8	3 38.0
Bolt Head, Flag-staff.....	50 13.2	3 48.75	Whitehaven**.....	54 33.2	3 35.75
Eddystone*.....	50 10.9	4 16.0	Harrington Pier*.....	54 36.7	3 34.25
Plymouth, Mount Wise, Flag-staff	50 22.0	4 10.25	Workington**.....	54 38.9	3 34.5
„ Breakwater, W. end,* Bell	50 20.3	4 9.5	Maryport, South Pier.....	54 43.0	3 30.5
Rame Head.....	50 19	4 13	Solway Firth,* Bell.....	54 47.7	3 31.75
Fowey, Castle.....	50 19.7	4 38.75	Carlisle Cathedral.....	54 53.8	2 56.0
Falmouth, Pendennis Castle....	50 8.8	5 2.75	Berwick,* Spire.....	55 45.8	1 59.0
„ St. Antony*.....	50 8.3	5 1.0	Holy Island, Castle.....	55 40.2	1 47.0
Lizard,** West Light.....	49 57.7	5 12.0	Farne Island**.....	55 37.0	1 39.25
Penzance,* Pier.....	50 7.1	5 31.5	Longstone Light*.....	55 38.7	1 36.5
Rundlestone Beacon.....	50 1.1	5 40.2	Cheviot Hill.....	55 29	2 9
Longships Light*.....	50 4.1	5 44.7	N. Sunderland Point, Mill.....	55 34.7	1 38.25
Seven Stones,* Gong.....	50 3	6 7	Coquet Isle*.....	55 20.1	1 32.25
St. Agnes' Light*.....	49 53.6	6 20.75	Blyth*.....	55 7.5	1 30.0
Cape Cornwall.....	50 7.7	5 42.5	Tynemouth*.....	55 1.3	1 25.0
St. Ives Church.....	50 12.8	5 26.5	North Shields Church.....	55 0.7	1 26.75
Trevoose Head**.....	50 33	5 2	Newcastle, Bridge, North end ..	54 58.7	1 35.5
Padstow Church.....	50 32.5	4 56.0	Sunderland, Pier**.....	54 54.5	1 21.5
Tintagel Church.....	50 39.8	4 45.5	Hartlepool, Pier**.....	54 41.8	1 10.75
Hartland Point.....	51 1.4	4 31.5	Seaton, High*.....	54 40.3	1 12.25
Lundy Isle**.....	51 10.1	4 40.25	Tees River, Bran Sand**.....	54 37.1	1 8.75
Bideford Lights**.....	51 4.5	4 12.0	Stockton, Church.....	54 34.0	1 18.75
Mort Point.....	51 11.4	4 13.75	Redcar, Church.....	54 36.9	1 3.5
Ilfracombe*.....	51 12.8	4 7.0	Whitby*.....	54 29.7	0 36.75
Burnham Lights**.....	51 15.0	3 0.0	Scarborough*.....	54 17.0	0 23.5
Flatholm Isle, South Point*.....	51 22.6	3 7.0	Flamborough Head*.....	54 7.0	0 5.0
Bristol Cathedral.....	51 26.8	2 35.5	Bridlington Quay, Mill.....	54 5.2	0 11.75
Newport, Usk Light*.....	51 32.4	2 59.75	Hull Citadel.....	53 44.6	0 20.0
Cardiff Custom-House.....	51 28.6	3 10.0	Killingholme,** Outer Light ..	53 38.7	0 12.7
Nash Point**.....	51 24.0	3 33.0			
Mumbles*.....	51 34.0	3 58.25	Channel Islands.		
Swansea Pier*.....	51 37.0	3 56.0	Alderney, St. Anne's Church ...	49 42.9	2 12.25
Worms Head.....	51 34	4 20	Pierre au Vrack, Rock.....	49 41.6	2 17.0
St. Govan's Head.....	51 35.8	4 55.5	Caskets,** Bell.....	49 43.4	2 22.5
St. Ann's Lights**.....	51 41.0	5 10.5	Guernsey, Jerbourg Tower.....	49 25.3	2 33.0
Milford Church.....	51 42.7	5 1.5	Pleinmont, S.W. Point, Guard Ho.	49 25.3	2 41.0
Pembroke Dock Yard, N.W. Corner	51 41.8	4 57.25	St. Pierre,* South Jetty.....	49 27.0	2 33.0
St. David's Cathedral.....	51 52.9	5 16.0	Fort Doyle, N.E. Point.....	49 30.1	2 31.25
Strumble Head.....	52 1.7	5 3.5	Herm Island, Mill.....	49 28.0	2 27.75
Cardigan Steeple.....	52 5.2	4 39.5	Sark, Telegraph.....	49 25.5	2 22.75
Aberystwith* Castle.....	52 24.9	4 5.25	Etat de Sark.....	49 23.6	2 23.0
Cader Idris, 3,549 feet.....	52 42.0	3 54.5	Jersey, St. Pierre, Church.....	49 12.5	2 11.75
Bardsey Isle*.....	52 45.0	4 48.0	St. Helier's**.....	49 11.3	2 7.0
Snowdon, 3,580 feet.....	53 4.1	4 4.5	C. Grosnez, Ruin.....	49 15.2	2 15.5
Caernarvon*.....	53 8.5	4 24.7	N.E. Point, or Point De la Coupe	49 13.9	2 2.3
South Stack*.....	53 18.3	4 42.0	S.E. Point, Seymour Tower.....	49 9.4	2 1.1
Holyhead,* Bell.....	53 20.0	4 37.0	Roches Douvres.....	49 6.5	2 49
Skerries*.....	53 25.3	4 36.5	Barnouic Rocks.....	49 1	2 48
Port Lynas*.....	53 25.0	4 17.25	Chausey Isles, Great Isle*.....	48 52.2	1 49.25
Great Orme's Head, Signal-staff..	53 20.0	3 51.25	Minquiers Rocks.....	48 59	2 19

III. SCOTLAND.	Lat. N.	Long. W.	SCOTLAND.	Lat. N.	Long. W.
Berwick *	55 48.2	2 0.0	Bard Head	60 6.1	1 4.5
Eyemouth, Church	55 52.3	2 5.5	Moosa Isle Summit	60 0	1 11
St. Abb's Head, Signal Station	55 55	2 8	Sunburgh Head *	59 51.3	1 17.0
Dunbar, Church	55 59.9	2 31.0	Fair Isle	59 33	1 38
Bass Rock	56 4.7	2 38.2	Faroes —Thorshaven, Hill N. of Pt.	62 0.7	6 45.25
North Berwick, Church	56 3.4	2 43.25	Nalsoe Island, North Point	62 39	6 41
Inch Keith *	56 2.0	3 8.0	Fugloe Island, East Point	62 20	6 13
Edinburgh Observatory	55 57.4	3 11.0	Waderoe Island, North Point	62 34	6 31
Leith Pier **	55 58.9	3 10.5	Myggeneoes, Western extremity	62 6	7 37
May Island **	56 11.1	3 38.25	Great Diamond	61 43	6 40
Fife Ness, Flag-staff	56 16.7	3 35.0	Suderoe Island	61 25	6 41
St. Andrew's, Church	56 20.4	2 47.5	Moak Rock	61 30	6 41
Bell Rock, * Bell	56 26.0	2 23.0	Pentland Skerries , * N. Point	58 41.2	2 55.0
Dundee **	56 27.6	2 57.75	Duncansby Head	58 39	3 1
Port-on-Craig **	56 27	2 49	Dunnet Head *	58 40.4	3 21.25
Buddon Ness **	56 28.1	2 45.0	Holburn Head	58 35	3 31
Arbroath, * Abbey	56 33.7	2 35.0	Thurso	58 38	3 31
Red Head	56 37	2 28	Strathy Head	58 36.0	4 9.5
Montrose **	56 42.5	2 28.0	Roan Island, middle	58 33.3	4 19.25
Stonehaven **	56 58.0	2 12.75	Far-out Head	58 36.2	4 45.0
Girdle Ness *	57 8.2	2 3.0	Cape Wrath *	58 37.5	4 59
Aberdeen , * Observatory	57 8.9	2 5.75	Bulgie Island	58 33	5 7
Buchan Ness *	57 28	1 46	Handa Isle	58 23.0	5 11.75
Peterhead, Keith Inch	57 30.1	1 46.0	Ru Stoer	58 16	5 22
Rattray Point	57 37	1 49	Ru Corgach	58 6	5 26
Fraserburgh **	57 41.9	2 0.0	Rea Head	57 54	5 38
Kinnaird's Head *	57 41.7	2 1.5	Point of Aird	57 39	6 18
Troup Head, Point	57 41.7	2 17.25	Dunvegan Head	57 32	6 41
Banff Pier *	57 40.3	2 31.5	Copnashow Head	57 18	6 43
Cullen, Castle Hill	57 41.4	2 49.5	Canna Island, West Point	57 4	6 34
Coyvenae Skerries *	57 48.4	3 20.25	Rum Isle, South Point	56 56	6 23
Burgh Head	57 42.1	3 30.0	West Point	57 0	6 30
Inverness Gaol	57 28.6	4 13.5	Hebrides —Barra Head *	56 47.1	7 39.25
Chanony Point *	57 34.5	4 5.5	Barra Isle, North Point	57 2	7 34
Fort George	57 35.1	4 4.5	Eris Kay	57 3	7 16
Cromarty Point *	57 41.0	4 2.0	South Uist, West Point	57 9	7 35
Tarbet Ness *	57 50.9	3 48.5	Stornaway *	58 11.5	6 22.25
Tain, Spire	57 48.7	4 3.2	Trompan Head	58 15	6 12
Ord of Cuth Ness, Needle	58 10.2	2 31.0	Butt of Lewis	58 31	6 14
Noss Head *	58 28	3 4	Gallen Head	58 14	7 2
Orkneys —South Point, or Brimnes	58 46.4	3 13.5	Scarp, West Point	57 59	7 9
Storr Roray	58 52.4	3 25.5	Flannan Isles, N.W. extremity	58 13	7 37
Sacroy Head	59 12.0	3 4.25	St. Kilda Peak	57 49.0	8 34.75
Noup Head	59 20.0	3 4.0	Glass Island *	57 52	6 33
Moul Head	59 23.0	3 53	Coll Isle, North and East Point	58 42	6 27
Stromness, S. Pt. of N. Ronaldsay	59 20	3 26	Tirey Isle, South extremity	58 27	6 56
North Ronaldsay Isle, East Point	59 23	2 24	Ben More, 3,168 feet	56 25.5	6 0.75
Tafts Ness	59 18	2 25	Isle of Mull, North-West Point	56 36	6 20
Start Light	59 16.6	2 32.0	Iona, West Point	56 19	6 29
Sanday Isle, Tromness	59 13	2 28.5	Ben Nevis, 4,368 feet	56 48	5 0
Stronsa Isle, Lamb Head	59 4.9	2 32.0	Fort William	56 48	5 5
Atskery Isle	59 2	2 34	Lismore Island *	56 27	5 36
Copnasha Isle	58 54	2 40	Oban Free Church	56 25.9	5 31.75
Strom Ness, Church	58 57.8	3 17.5	Colonsay, North Point	56 8	6 10
Brough of Birsay	59 8.2	3 20.0	Rhuna of Isla, Oerna Isle *	55 40	6 31
Kirkwall *	58 59.2	2 57.25	Mull of Oe, South extremity	55 35	6 18
Shetlands —Houl Isle	60 9	2 6	Ben Turich, 1,516 feet	55 34	5 34
Fitful Head	59 54	1 24	Mull of Cantyre *	55 20	5 49
Skelda Ness	60 8.8	1 28.0	Campbelton *	55 25.0	5 35.5
Ve Skerries	60 22.5	1 48	Glasgow New Bridge	55 51.9	4 16
Fugloe Skerry	60 20.4	1 45.0	Port Glasgow, Basin	55 56.2	4 41
Eaha Ness Skerry	60 28.5	1 37.25	Greenock Spire	55 56.9	4 45.25
Ossa Skerry	60 33.0	1 35.5	Cumbrne *	55 48	4 59.7
Rooness Hill	60 32	1 27	Androssan **	55 38.7	4 50.5
Uya, N.E. Point	60 37	1 28	Fladda Lights **	55 25.6	5 7.0
Gloup Holm, Summit	60 44.2	1 6.5	Ailam Craig	55 15.3	5 7.0
N. exterior Outer Stack Rock	60 51.5	0 52.5	Ayr ***	55 28	4 38
Balta Island, South Point	60 44.4	0 47.75	Stranraer Church	54 54.5	5 2.0
Fetlar Island, East Point	60 36.2	0 46.0	Lough Ryan *	54 58.5	5 1.75
Burra Voe Ness	60 29.5	1 2.0	Corall Point *	55 0.5	5 9.5
Brury Isle, North Summit	60 25.7	0 45.0	Port Patrick *	54 50.3	5 6.75
Halsey Island, South Summit	60 20	1 0	Mull of Galloway *	54 38.1	4 51.25
Noss Head	60 8.3	1 0.5	Burrow Head	54 41	4 23
Lerwick Port	60 9.4	1 8.75	Annan, Church	54 59.2	3 15.5

IV. IRELAND.	Lat. N.	Long. W.	IRELAND.	Lat. N.	Long. W.
Dublin Observatory	53 23.2	6 20.25	Galway, Mutton Island Light* ..	53 15.2	9 3.67
Kingstown, East Light*	53 18.2	6 7.5	Skird Rocks, Outer	53 15	10 2
Kish Light,* Gong	53 19.0	5 56.5	Slyne Head*	53 24.0	10 14.16
Great Sugar-loaf	53 9.2	6 9.0	Shark Head	53 36	10 29
Wicklow Black Castle	52 58.8	6 2.0	Clare Island, North Point*	53 49.5	9 59
Wicklow Head**	52 57.9	6 0.0	Innisgort*	53 49.5	9 41
Arklow Church	52 47.8	6 9.25	Westport	53 48	9 31
Arklow Light,* Gong	52 42.0	5 59.75	Newport	53 53	9 33
Cahore Point	52 34	6 12	Bills Rock	53 53	10 11
Wexford, Rosslare Pt., Coast Guard ..	52 19.9	6 22.25	Achill Head, 2,222 feet	53 58	10 16
Wexford College, Tower	52 20.1	6 28.25	Black Rock	54 4	10 21
Tuskar Rock,* Bell	52 12.1	6 12.25	Eagle Island**	54 17	10 6
Greenmore Point	52 15	6 20	Erris Head	54 17	10 0
Carnmore Point	52 10.3	6 21.75	Stag Rocks, Northernmost	54 22	9 48
Saltees or Kennibeg,* Gong	52 2.8	6 40.0	Downpatrick Head	54 20	9 21
Hook Light*	52 7.4	6 55.75	Killala	54 11	9 13
Waterford Bridge	52 16	7 6	Ballina Spire	54 6.6	9 9.67
Duncannon Fort**	52 13.7	6 56.5	Black Rock*	54 18	8 37
Dunmore Pier*	52 9	6 59	Sligo Bridge	54 16	8 28
Browstown Head	52 7	7 7	Innie Murray Island	54 26	8 40
Helwick Head	52 3	7 38	Ballyshannon, Church	54 30.2	8 11.9
Dungarvan Pier	52 5	7 38	Donegal	54 39	8 7
Cloomed	52 22	7 44	Enniskillen	54 21	7 40
Youghal*	51 57	7 52	St. John's Point,* Killibeg's Light ..	54 34	8 28
Roche Point*	51 47.5	8 15.25	Rathlin O'Birne*	54 40	8 50
Haulbowline I., Tower	51 50.5	8 18.25	Teelen Head	54 40	8 45
Cork Custom-house	51 53.8	8 27.75	Daurus Head Point	54 49.6	8 34.16
Berry Head	51 42.1	8 23.25	N. Arran Island, N.W. Point ..	55 1.4	8 34.16
Charles Fort, Flag Staff	51 41.8	8 29.75	Stag Rocks	55 4.6	8 29.16
Kinsale Old Head*	51 36.7	8 32.25	Bloody Foreland Hill	55 8.2	8 15.9
Seven Heads, Telegraph	51 34.2	8 42.75	Tory L.,* Light on N. and W. Point ..	55 16.5	8 15.16
Galley Head, South Point	51 31.8	8 57.0	Horn Head, East Summit	55 12.5	7 57
Stags, off Toe Head	51 28.1	9 13.5	Melmore Point, Tower	55 15.2	7 47.0
Baltimore	51 29	9 22	Limeburner Shoal	55 18	7 48
Cape Clear, South-East Point	51 26	9 29	Fannet Point*	55 16.6	7 37.7
Fastnet Rock*	51 23.3	9 36.6	Buncrana Church	55 8.1	7 27.25
Crookhaven*	51 28.6	9 42.6	Dunaff Head	55 17.1	7 32
Mizen Head	51 27	9 50	Malin Head Tower	55 22.8	7 22.25
Sheep Head	51 33	9 52	Innistrahul Light*	55 25.9	7 13.7
Bear Haven, Bear Island, Summit ..	51 37.5	9 52.4	Sheve Sneacht, 2,239 feet	55 12	7 20
Hungry Hill	51 41	9 48	Inishowen Head**	55 13.8	6 55.5
Bantry Church	50 40.8	9 27.4	Londonderry Bridge	54 59.6	7 19
Rosaharrick Island*	51 39.2	9 44.9	Portrush Pier	55 12.4	6 39.7
Creagh Rocks	51 32	10 10	Giants' Causeway Point	55 14.7	6 36.75
Calf Rock	51 34	10 18	Rachlin Island,* Church	55 17.6	6 11.7
Bull Rock	51 36	10 18	Fair Head	55 13.3	6 8.7
Cod's Head	51 40	10 7	Torr Point Rock	55 11.8	6 3.5
Kenmare	51 53	9 33	Knocklady, 1,890 feet	55 9.7	6 15.2
Scara Rock	51 44	10 15	Maiden Rocks**	54 55.8	5 44.25
Lamb-Head Point	51 45	10 7	Black Head	54 46.1	5 41.25
Boia Head	51 46	10 19	Carrikerfergus	54 45.5	5 48.5
Skelligs**	51 46	10 32	Belfast Spire	54 36.4	5 56.25
Bros Head	51 53	10 25	Divis, 1,800 feet	54 36.7	6 1.0
Valentia, Cromwell's Fort,* S.M. ..	51 55.8	10 19.9.7	Copeland Island*	54 41.7	5 31.2
Killarney	52 4	9 30	Donaghadee*	54 38.6	5 31.7
Ventry Head	52 6	10 20	Kircubbin	54 29	5 34
Foss Rock	52 1	10 40	Portaferry	54 23	5 34
Traght Rock	52 3	10 39	South Rocks*	54 23.9	5 25.0
Great Blasket, North Point	52 6	10 31	Ardglass Pier*	54 15.4	5 38.0
Ennis Tuskar Rock	52 7	10 35	Downpatrick Cathedral	54 19.6	5 43.0
Dunorling Head	52 12	10 25	St. John's Point*	54 13	5 50
Brandon Hill, 3,125 feet	52 14	10 15	Slieve Donard, 2,796 feet	54 10.8	5 55.25
Brandon Head, Point	52 18	10 10	Carlingford*	54 2.0	6 7.75
Tralee	52 16	9 48	Blockhouse Island,** Bell	54 1.2	6 4.75
Shannon, Kerry Head	52 23	9 55	Newry Church	54 10.6	6 19.75
Farbot*	52 35.5	9 21.9	Dundalk Spire	54 0.5	6 24.0
Limerick Bridge	52 39.6	8 39	Clogher Head	53 47.6	6 13
Kilrardan Light*	52 34.8	9 42.66	Drogheda***	53 42.8	6 15
Loup Head*	52 34	9 56	Balbruggan*	53 36.8	6 10.75
Ballard Point	52 43	9 39	Rockabil Island	53 35.8	6 0.25
Rag's Head	52 57	9 28	Lambay Island	53 29.6	6 1.0
South Arran Island*	53 7.6	9 42.4	Howth Bailey* Light	53 21.7	6 3.0
Black Head	53 9	9 17	Rockal, a Rock N.W. of Ireland, } in open sea	57 36	13 41

V. NORTH COAST OF EUROPE.

	Lat. N.	Long. E.
Dunkirk*	51 3.1	2 22.0
Nieuport,* N.W. of Town	51 8.6	2 44
Ostend,** West Light	51 14.1	2 55.0
Blankenburg *	51 19.0	3 8.0
Heyst *	51 20.4	3 14.2
Flushing *	51 26.4	3 34.75
West Kappel *	51 31.8	3 27.0
Middelburg	51 30.0	3 37.0
Schouwen,* West End	51 42.6	3 41.75
Bergen-op-Zoom Church	51 29.7	4 17.5
Goodereede Church *	51 49.2	3 58.5
Antwerp Cathedral	51 13.2	4 24.25
Helvoetsluys *	51 49.2	4 8.0
Brielle	51 54.2	4 10.0
Rotterdam Cathedral	51 55.3	4 29.5
The Hague, St. James's Church..	52 4.3	4 18.7
Scheveningen *	52 6.3	4 16.5
Katwyk, Coast Light *	52 12.0	4 23.75
Nordwyk * Light	52 14.6	4 26.0
Alkmaar	52 37.9	4 45.25
Zandvort *	52 22.3	4 32.0
Egmont**	52 37.2	4 38
Kyk Down *	52 57.1	4 43.5
Helder	52 57.7	4 45.0
Texel, West Point	53 3	4 42
Medemblik Church	52 46.4	5 6.5
Marken Island *	52 27.6	5 8.7
Amsterdam, West Steeple	52 22.5	4 53.25
Haarlem, Great Church Tower	52 22.9	4 38.5
Leyden Observatory	52 9.5	4 29.5
Vlieland *	53 17.8	5 3.7
Ter Schelling *	53 21.6	5 13.25
Ameland Beacon	53 27.0	5 42.0
Schiermonckoog **	53 29.3	6 10.0
Rottum Beacon	53 32.0	6 32.0
Borcum *	53 35	6 40
Emden, Hotel de Ville	53 22.1	7 12.75
Wangeroog *	53 47.6	7 54
Bremer or Weser, * Bell, Guns	53 49	8 8
Bremen Observatory	53 4.6	8 49.0
Heligoland *	54 10.8	7 53.0
Elbe, Outer Light, Bell, Gun	54 0.0	8 18.0
„ Inner Light, Bell	53 58.8	8 26.0
Eider,* Bell, Gun	54 10.7	8 35.0
Newark Isle **	53 55.2	8 30.0
Cuxhaven *	53 52.5	8 43.0
Gluckstadt Pier *	53 47.1	9 24.5
Altona Observatory, S. M.	53 32.7	9 56.39"
Hamburgh	53 32.8	9 58.5
Horn Point	55 35	7 40
Hantsholmen Point *	57 6.8	8 36.2
Harshall's Nist	57 35	9 56
The Skaw Point *	57 43.8	10 36.5
Hirtsholmen *	57 29.2	10 37.5
Fladstrand Church	57 27.0	10 33.75
Niedingen,* * Bell	57 19	11 53
Trindelen,* Bell	57 25.6	11 16
Lessoe Isle, Byrum Church	57 15.4	11 0.25
Anholt, East Point *	56 44.3	11 39.25
Knobens * Light, Bell	56 45.7	11 50.75
Hesselo *	56 11.7	11 43
Aalborg	57 2.7	9 55
Forenas *	56 26.7	10 57.5
Aarhus, Cathedral	56 9.5	10 13.0
Thunoe Island *	55 56.9	10 27.0
Baagoe, South Point *	55 17.7	9 48.0
Apenrade	55 2.6	9 25.25
Assens, Church	55 16.1	9 53.75
Flensburg	54 46.9	9 26.2
Siallands, N.W. Point	56 5	11 15
Kyholm *	55 56.0	10 40.7
Refsnes *	55 44.7	10 52.5
Sprogo *	55 20	10 58

NORTH COAST OF EUROPE.

	Lat. N.	Long. E.
Nyeborg *	55 18.7	10 47.7
Fakkeberg *	54 44.4	10 42.0
Spodsbjerg *	55 58.6	11 52.0
Nakkehoved **	56 7.2	12 21.0
Elsinor, Kronberg *	56 2.2	12 37.5
Copenhagen Observatory	55 40.9	12 34.75
Malmö *	55 36.1	13 0.0
Landskrona *	55 52.4	12 50.0
Helsingborg *	56 2.7	12 42.25
Kullen *	56 18.0	12 27.5
Engelholm	56 14.6	12 52.0
Hallands Wadery, West extremity	56 27.1	12 32
Halmstadt, Fort	56 40.4	12 51.75
Falkenberg Church	56 54.0	12 30.0
Moruptange * Light	56 55.2	12 21.75
Warberg Castle	57 6.4	12 14.5
Niddingen,* * Bell	57 18.2	11 54.3
Vanguard Shoal	57 32	11 39
Wingo **	57 38.0	11 36.2
Buskär * Light	57 38.6	11 40.75
Gottenburg	57 42.3	11 56.5
Marstrand * Light	57 53.2	11 35.0
Paternoster Isl., S. & W. extremity	57 53.5	11 27
Salo * Light	58 20.2	11 16
Rock	58 42	10 53
Torbjornskar Beacon	58 58.7	10 47
Foerder * Light	59 4	10 32
Fulehuk * Light, Bell	59 11.4	10 37
Frederiksteen	59 7.5	11 24
Frederikstadt	59 13	10 57
Christiania, New Observatory	59 54.7	10 43.5
Svenoe Langoe Sound * Light	58 58	9 46
Tvesteen	58 56	9 57
Reierskar Rock, Gun	58 10.1	8 27
Jomfrueland *	58 52	9 36
Arendal Torungen *	58 23.2	8 52.5
Oxo Light *	58 3.7	8 6
Christiansand	58 8.1	7 59.0
Flekkeø Island	58 2	7 57
Ryvingen Island	57 57.0	7 31
Naze Light *	57 57.8	7 2
Listersteen Light *	58 6	6 32
Tungesnes Light *	59 3	5 37
Hvidingsøe Light *	59 5	5 25
Skuddesnes Light *	59 8.7	5 19
Hoievarde Light *	59 20	5 20
Udsire **	59 18.3	4 53.5
Sor Hougøen Rock *	59 25.2	5 15.25
Bommeløe, South Point	59 35	5 11
Fugløe	60 1	4 59
Kors Fiord	60 8	4 57
Bergen	60 24	5 18
Stadtland, North-West Point	62 11	5 8
Rondo Light *	62 24.6	5 36
Quistholm Light *	63 2.2	7 14
Christiansund *	63 7	7 39
Trondheim Cathedral	63 25.8	10 23.75
Titterhead	63 40	8 19
Vigten Isles, West extremity	64 46	10 24
Proestoe Light *	64 47.4	11 8
Lekøe	65 5	11 37
Tranen Isles, Great Isle, N. Peak	66 31	12 4
Kunna	66 57	13 32
Lofoden Isles, South Point	67 49.5	12 50
West Vangøe Isle, North Point	68 20.5	13 59
Langøe Isle, West Point	68 37	14 14
Andøe, North Point	69 20	16 8
Tromsøe Observatory	69 39.2	18 57.0
Hammerfest Church	70 40.0	23 42.0
Vandø, North Point	70 17.6	19 36
Arno, North-East Point	70 13	20 49
Sorøen, West Point	70 39	21 55
North Cape	71 10.3	25 46.0

VI. BALTIC.	Lat. N.	Long. E.	BALTIC.	Lat. N.	Long. E.
Copenhagen Observatory	55 40.9	12 34.75	Björko Island, South Point.....	60 15.7	28 43.2
Steffens Klint*.....	55 18	12 27	Styrsudd Head, Beacon.....	60 12.0	29 0.0
Moen Island, East Point*.....	54 57	12 33	Orregrund, Beacon.....	60 16.6	26 27.25
Giedserodde*.....	54 33.8	11 58.0	Great Pellinge or Glosholm*.....	60 11.2	25 50
Trindelen	54 30.5	12 4	Söderskar Tower	60 6.2	25 24
Kiel Observatory.....	54 19.5	10 9.0	Kallbaden	59 59	25 37
Marienleuchte*.....	54 29.7	11 14.25	Helsingfors Observatory.....	60 9.7	24 57.5
Staberbuk, S.E. Point of Fehmern	54 24	11 19	Sveaborg.....	60 8.4	24 59.75
Lübeck, Church, St. Mary's	53 52.1	10 41.5	Rönkar Light*.....	59 56	24 24
Wismar, Church, St. Mary's	53 53.5	11 27.75	Jussari, Pilot's House	59 49.7	23 34
Warnemünde*.....	54 10.7	12 5.75	Segelakar, Beacon	59 46	23 22
Rostock.....	54 5.5	12 9.0	Hango Light*.....	59 46.0	22 58
Dars Head**.....	54 28.6	12 30.5	Abo Observatory	60 27.0	22 17.5
Stralsund	54 18.3	13 5.5	Uto*.....	59 46.5	21 22
Arkona*.....	54 40.9	13 26.2	Lagskar*.....	59 50.5	19 55.25
Bergen Church.....	54 25.5	13 28.0	Enskar*.....	60 43	21 2
Rügen, East Point	54 21	13 48	Sabbakar, Beacon	61 27.7	21 22
Griesswaldoe Light**.....	54 15.1	13 55.7	Björneborg	61 29.0	21 48
Swinemünde*.....	53 56.0	14 17.0	Torngrund Beacon.....	62 13.0	21 20
Stettin.....	53 25.1	14 34.0	Christinestad	62 16.2	21 23
Colberg, Fort	54 10.8	15 35	Storkalle Shoal, South Point....	62 45	20 50
Jershoft Light*.....	54 32.5	16 33.0	Fallakar Beacon	63 4	20 49
Hela Light*.....	54 36.1	18 49.25	Wasa Church	63 4.3	21 43
Rexhoft*.....	54 49.9	18 20.5	Kornoran Beacon	63 11.8	21 10
Neufahrwasser*.....	54 24.2	18 40.25	Nordakaren*.....	63 14	20 38
Danzig Observatory.....	54 21.3	18 41.2	Tankar Beacon	63 57.3	22 52
Pillau*.....	54 38.4	19 54.0	Gamla Karleby	63 50	23 9
Königsberg Observatory.....	54 42.8	20 30.25	Kalla Rock, Outer Rock.....	64 20.0	23 29
Brusterort*.....	54 57.6	19 59.25	Carlo Island Beacon, West Point..	65 2.0	24 33
Memel*.....	55 43.7	21 6.2	Uleaborg Church	65 1.0	25 30
Libau	56 31.6	20 57.0	Ulkogrunni Beacon	65 24	24 51
Windau Church	57 23.9	21 34.0	Malörn*.....	65 31	23 38
Lyserort Light*.....	57 34	21 44	Tornea	65 50.8	24 14
Domesness**.....	57 45.6	22 37	Rodkallen Rocks.....	65 20	22 23
Runo Island*.....	57 48	23 16	Pitea.....	65 19.2	21 30.0
Riga,** Cathedral	56 57.0	24 6.5	Great Fjäderäg* Island	63 48	21 1
Pernau, German Church	58 23.1	24 30.25	Gadd,* on South Point of Island..	63 36.0	20 46
Arensburg	58 15.1	22 30	Umea	63 49.5	20 18
Svalfe Rort, (Esel Isl., S. Point*..	57 54.6	22 5	Hernösand	62 37.9	17 57
Filsand, W. Point of Great Island	58 23	21 51	Stor Jungfrun,* East Point	61 10	17 20
Dagerort Light*.....	58 55.0	22 12.0	Söderhamm	61 17.7	17 5
Winkova, White Beacon	59 12	22 18	Gefle.....	60 40.3	17 9
Odensholm Light*.....	59 18.3	23 22.0	Eggrund*.....	60 43	17 32
Packerort Light*.....	59 23.5	24 2	Orskar*.....	60 31.5	18.22
Surop Light*.....	59 27.9	24 23.25	Svartklubb*.....	60 9.8	18 50
Nargen, North Point*.....	59 36.4	24 31.0	Söderarm Light*.....	59 45.2	19 28
Revel,** St. Olaus Church.....	59 26.6	24 45.25	Svenska Hogarne	59 27	19 31
Kokskar Light*.....	59 42.0	25 2	Stockholm Observatory	59 20.6	18 3.75
Ekholm Light*.....	59 41.2	25 49	Korsö Light*,.....	59 17.3	18 58
Stoneskar Beacon	59 49.5	26 21	Gronskar Light*.....	59 17	19 2
Rothskar Island*.....	59 58.2	26 42.0	Landsort*.....	58 44.5	17 52.75
Little Tiouters, West Point.....	59 50.0	26 53.0	Westerwyk.....	57 45.6	16 38
Great Tiouters, East Point	59 51.0	27 14.5	Kalmar, Church.....	56 39.5	16 22
Hogland**.....	60 6.3	26 58.5	Gottaka Sando, West Point	58 24	19 11
Lavenskar Island, North Point...	60 2.3	27 51.0	Faro Island, Holm Head*.....	57 58	19 23
Peni Island, East Point	60 1.1	28 5.0	Gothland, South Point, Hoborg*..	56 55.2	18 9
Seskar Island, North-West Point*	60 2.1	28 23.5	Ostergarnsholm Light*.....	57 26.5	18 59
Cape Kolganpia	59 50.9	28 34.75	Wisby.....	57 38.6	18 16
Dolgoi Noss	59 54.8	29 0.5	South Carlso	57 19	17 59
Tolboukhin Light*.....	60 2.6	29 34.0	Oland, North Head*.....	57 22	17 6
London Shoal*.....	60 0.0	29 32.5	„ South Head*.....	56 11.8	16 25
Kronstadt, Cathedral	59 59.7	29 46.5	Christianopol	56 15.5	16 3.0
Elaghin Channel Light*.....	59 58.3	30 10.5	Utklipporna Rocks*.....	55 56.5	15 42
Ship Channel Light*.....	59 55.3	30 10.7	Carlsrona	56 9.7	15 35.5
St. Petersburg Observatory.....	59 56.5	30 19.0	Carlshamn*.....	56 10.3	14 52.0
Poulkova Observatory	59 46.3	30 19.75	Hano Island	56 1.0	14 51
Grekovala Beacon.....	60 11.6	28 42.5	Ahus	55 55.5	14 18
Wiborg	60 42.7	28 46	Cimbrishamn	55 33.5	14 21.25
Aspo Beacon*.....	60 17.7	27 13	Ystad, Church	55 25.8	13 49.5
Nerva Tower	60 14.8	27 58.5	Earthholms, North Point*.....	55 19	15 12
Sommers Island*.....	60 12.4	27 39.5	Bornholm, North Point*.....	55 17.7	14 46
Lippu Island Beacon	60 14.3	27 3.0	„ South Point	54 59	15 5
Frederickshamn.....	60 34	27 16	„ Rönne*.....	55 6	14 42
Lovisa	60 27.6	26 16	Falsterbo*.....	55 23.1	12 49.25

VIL FRANCE.		Lat. N.	Long. E.	FRANCE.		Lat. N.	Long. W.
Gravelines *	51 0.3	2 6.5		L'Orient, Tower	47 44.7	3 21.21	
Calais, * Bell	50 57.6	1 51.04		Port Louis, Church	47 42.6	3 21.2	
Cape Grines *	50 52.2	1 35.04		Ile de Groix *	47 38.9	3 30.7	
Boulogne, Column	50 44.5	1 37.04		Port Hailgum, * East Jetty	47 29.2	3 6.2	
Boulogne, ** Jetty	50 43.9	1 35.0		Teignouse *	47 27.5	3 2.7	
Port Alpreck *	50 41.9	1 3.75		Port Navale *	47 32.9	2 55.2	
Etapes *	50 32.9	1 38.5		Penlan Point *	47 31.0	2 30.2	
Port Lornel *	50 33.6	1 34.5		Belle Ile *	47 18.7	3 13.7	
Port de Touquet **	50 31.7	1 35.5		Port de Palais *	47 20.9	3 9.2	
Port de Berck *	50 24.0	1 33.5		Roedic Ile *	47 20.5	2 52.2	
Abbeville, Nôtre Dame	50 7.1	1 49.75		Le Four Roche *	47 17.9	2 38.2	
St. Valery-sur-Somme	50 11.4	1 37.75		Vannes St. Pierre	47 39.5	2 45.4	
Cayeux *	50 11.7	1 30.75		Guerande, Church	47 19.7	2 25.7	
Tréport *	50 3.9	1 22.0		Croisic, Church *	47 17.7	2 31.0	
Dieppe, West Jetty *	49 56.0	1 5.04		Aiguillon, Tower	47 14.6	2 16.0	
Cape Ailly *	49 55.1	0 57.5		Port St. Nazaire, Moie *	47 16.3	2 12.0	
St. Valery-en-Caux	49 52.4	0 42.5		Paimboeuf, Church	47 17.3	2 2.2	
Recamp, Mont de la Vierge	49 46.1	0 22.0		Nantes, Cathedral	47 19.1	1 33.2	
Cape de la Heve **	49 30.7	0 4.0		Le Piber Ile *	47 2.6	2 21.7	
Havre, North Jetty, * Bell	49 29.3	0 6.54		Normoustier, South Point	48 53.9	3 9.0	
Port du Hoc *	49 28.7	0 11.3		Ile Dieu, St. Sauveur Church	48 42.4	2 20.0	
Paris Observatory	48 50.2	20.20' 9"		St. Gilles-sur-Vie Church	48 41.7	1 56.2	
Quillebeuf *	48 28.4	0 31.5		Sables d'Olonne Church	48 29.8	1 47.2	
Honfleur **	48 25.5	0 18.5		Le Chaume *	48 29.7	1 47.7	
Mouth of the Touques **	48 21.7	0 4.75		Roche Bonne, West	48 13	2 29	
	Lat. N.	Long. W.		Port de Grouin de Cou *	48 20.8	1 28.2	
Mouth of the Orne **	49 16.6	0 15.5		Port de l'Aiguillon *	48 16.1	1 12.7	
Port Corneilles *	49 20.3	0 27.5		Ile Ba, North Point *	48 14.7	1 33.7	
Caen, Abbey	49 11.2	0 21.2		Port St. Martin *	48 12.4	1 23.0	
Port de Ver *	49 20.5	0 31.2		South Port de Chauveau *	48 8.0	1 16.5	
Carentan	49 18.4	1 14.7		Rochelle, ** Tower	48 9.4	1 9.5	
St. Marcouf Island *	49 29.9	1 9.0		Oleron Ile, North Point *	48 2.8	1 24.7	
La Hougue **	49 34.3	1 16.5		Aix Ile *	48 0.6	1 10.7	
Cape Bartleur *	49 41.8	1 16.0		Rochefort, Hôpital	45 56.6	0 58.0	
Port Bartleur *	49 40.1	1 15.7		Port de la Coubre *	45 41.5	1 15.5	
Pelee Island, Port Royal *	49 40.3	1 35.0		River Gironde, Cordouan Light *	45 35.2	1 10.46	
Charbourg, Church	49 38.6	1 37.45		Terre Nègre, * Tower	45 38.8	1 6.46	
Cape La Hague *	49 43.4	1 57.8		Port Royan *	45 37.1	1 2.0	
Maitrease Isle	48 58.3	2 4.0		Pointe de Grave *	45 34.1	1 3.7	
St. Germain	49 14.2	1 36.0		Bordeaux, St. André	44 50.3	1 34.7	
Cape Carteret *	49 22.4	1 48.5		Basin d'Arcachon, Cape Ferret *	44 38.7	1 15.2	
Coutances Cathedral	49 2.9	2 26.7		Port St. Martin de Biarritz	43 29.8	1 33.2	
Granville, Cape Libou *	48 50.1	1 37.0		Bayonne, Cathedral	43 29.5	1 28.7	
Mont St. Michel	48 38.2	1 30.7		St. Jean de Luz	43 23.8	1 40.0	
Conzale, Church	48 40.7	1 51.0			Lat. N.	Long. E.	
Herpin Rock	48 43	1 50		Cape Bearn *	42 31.0	3 7.25	
St. Malo *	48 39.0	2 1.7		Port Vendres *	42 31.3	3 6.8	
La Conche Rock	48 41	2 3		La Nouvelle *	43 0.8	3 3.8	
Cape Frehel *	48 41.1	2 19.2		Fort Brascou, * S.E. Bastion	43 15.5	3 29.8	
Grand Leyon Rock	48 45.0	2 40.0		Agde Harbour, * East Jetty	43 16.7	3 26.5	
St. Briek, Cathedral	48 30.9	2 46.0		Cette, * Fort Louis	43 23.8	3 42.0	
Honane Rock, Beacon	48 53.6	2 57.2		Aigues Mortes *	43 32.0	4 7.8	
Heaux de Brest *	48 54.5	3 5.2		Camargue, * West Mouth of Rhone	43 20.7	4 40.8	
Treguer, Cathedral	48 47.3	3 14.0		Port de Bouc **	43 23.6	4 59.0	
Les Sept Isles *	48 52.8	3 29.45		Marseille, ** Port St. Jean	43 17.7	5 21.54	
Trigor Shoal, West extremity	48 53	3 44		Planier Ile *	43 11.9	5 13.8	
Morlaix *	48 38.2	3 53		Mont St. Michael, Semaph., 1341 ft	43 18	5 22	
St. Pol de Leon, Cathedral	48 41.0	3 59.2		Ile Riou	43 10	5 23	
Ile de Batz, * West side	48 44.8	4 1.7		Port Cassin *	43 12.6	5 31.8	
Ile Vierge *	48 38.4	4 34.2		Cassidague	43 8.7	5 32.8	
Abervrach *	48 36.9	4 34.7		Cape Sicie, Semaphore	43 3.2	5 51	
Plouguereau *	48 36.3	4 29.2		Toulon, Semaphore	43 4.4	5 56.3	
Port St. Matthew	48 19.8	4 46.4		Grand Riveau *	43 1	6 9	
Ushant *	48 28.5	5 3.45		Porquerolles Isle, South Point *	42 50.0	6 12.3	
Kermorvan *	48 21.7	4 47.45		Titan Isle, N.E. Port *	43 2.8	6 30.5	
Brest Observatory	48 23.6	4 29.45		Cape Camorat *	43 12.0	6 40.5	
Ile de Sein *	48 2.7	4 52.2		Frejus	43 25	6 46	
Outer Rock	48 3	5 15.2		Cape Roux	43 28	6 55	
Bec du Raz *	48 2.4	4 44.0		Cannes, South Tower	43 32.9	7 0.8	
Audierne Church	48 1.4	4 32.7		Cape Garoupe *	43 33.8	7 8	
Penmarc'h Rocks *	47 47.9	4 22.45		Antibes *	43 35.1	7 7.5	
Ile Glénan, Penfret Ile *	47 43.3	3 57.2		St. Laurent du Var	43 40.7	7 10.8	
Quimper River, Benodet, Church	47 52.6	4 7.0		Nice, St. Francis Church	43 42.0	7 16.8	

VIII. SPAIN.		Lat. N.	Long. W.	SPAIN.		Lat. N.	Long. W.
Fontarabie,* Church	43 21.7	1 47.25	Fort Arrabida	38 27.5	8 50		
Cape Figuer	43 28.7	1 47.25	Outao Light *	38 27	8 56		
Port Passages,* Church	43 19.7	1 56.25	St. Ubes, or Setuval	38 31	8 53		
St. Sebastian *	43 19.2	2 0.5	Cape Sines, Fort	37 57.5	8 52.5		
Cape Machichaco *	43 23	2 49	Odemira, Tower	37 39.6	8 49		
Cape Villano	43 27	2 58	Cape St. Vincent *	37 2.9	9 0		
Bilbao, St. Nicholas	43 15.8	2 54	Lagos, Cathedral	37 7.7	8 40.75		
Portugalete	43 20.2	3 8	Cape Carvoeira, Tower	37 6.5	8 21		
Monte Serranhus	43 21	3 5	Cape Sta. Maria *	36 56	7 46		
Santoua	43 27	3 27	Monte Figo	37 10	7 42		
Cape Ajo	43 31.4	3 36	River Guadiana	37 10	7 18		
Santander	43 27.9	3 48.75	San Lucar, Guadalquivir	36 44	6 24		
Cape Mayor *	43 30	3 47	Rota, Pier	36 36.6	6 16.25		
Cape Hoyambre	43 25	4 21	Cádiz Observatory	36 32.0	6 17.25		
Cape Prieto	43 28	4 51	St. Sebastian *	36 31.6	6 18.5		
Point del Caballo	43 30	5 6	Cape Trafalgar	36 10	6 1		
Lastres	43 33	5 16	Tarifa	36 0	5 36		
Cape Penas *	43 42.0	5 47.75	Algeciras	36 8.0	5 28.9		
Cape Busto	43 36	6 25	Gibraltar	36 7.3	5 21.25		
Cape Blanco	43 35	6 47	Europa Point *	36 6.7	5 22.0		
Ile Pancha, West extremity	43 34.7	6 59.25	Cape Sardinia, Tower	36 18	5 14		
Rivadeo	43 34	7 5	Retapona	36 25	5 9		
Monte Mondigo	43 32	7 5	Malaga, Mole *	36 43.5	4 26		
Point de los Calos	43 36	7 13	Motril	36 45	3 34		
Cape Burela	43 42	7 21	Cape Sacratif	36 41	3 28		
Monte Faro	43 44	7 35	Almeria	36 50	2 32		
Port Barquero	43 45	7 43	Cape de Gata, Castle	36 43	2 12		
Port Vivero	43 40.5	7 36	Mojacar	36 58	1 55		
Cape Vares	43 48	7 41	Cape Tinos	37 31	1 9		
Point de la Estaca *	43 48	7 43	Cartagena, Mole *	37 36	0 56		
Cape Ortegal, Tower	43 45.2	7 56	Cape de Pulas, Tower	37 37.5	0 40		
Cape Prior *	43 34.1	8 19	Cape Servera	38 0	0 38		
Monte Ventoso	43 29	8 20	Cape Sta. Pola, South Point	38 11	0 29		
Ferrol, Mole	43 29.5	8 12.75	Alicante,* Castle	38 20.7	0 28		
Gorona, Castle, St. Antonio	43 29.5	8 22.7	Benidorm	38 29	0 6		
Ciargas Isles	43 21.5	8 50	Cape Cullera, Tower	39 12	0 13		
Cape Villano, North-East Point	43 10	9 12	Valencia,* Cathedral	39 28.7	0 24		
Cape Torilana	43 2	9 17	Cape Canet, Tower	39 43	0 9		
Cape Finisterre *	42 53	9 15		Lat. N.	Long. E.		
Monte Louro	42 44	9 44	Cape Oropesa, Tower	40 5.2	0 10		
Cape Corrobido *	42 35	9 4	Peniscola, Tower	40 23	0 25		
Ons Isle	42 30	8 55	Port Aliaques, San Carlos	40 37.7	0 35		
Cies Isle, South-West extremity	42 11	8 53	Ebro, North Passage	40 43.0	0 54		
Cape Silleiro, West Point	42 6	8 52	" South Passage	40 41	0 53		
Vigo Light *	42 15	8 40	Tortosa, Cathedral	40 48.8	0 33		
Monte Nona Senora del Alba	42 14	8 45	Salau Light, Mole *	41 4	1 9		
Monte Tecla, River Minho	41 53	8 50	Tarragona *	41 7	1 16		
Caminha	41 52.7	8 45.0	Barcelona, Mole *	41 22.6	2 11		
Vizna, Fort St. Jago *	41 42.6	8 43.25	Cape St. Sebastian	41 53	3 13		
Villa de Coude	41 21.3	8 35.75	Cape Norfeo, East Point	42 14	3 17		
Monte Ornelias	40 50	8 21	Cadaques, Church	42 17	3 17		
Oporto, Fort St. John	41 8.8	8 37.25	Cape de Creux, Ruin	42 19.2	3 20		
" Light *	41 9.1	8 37.5	Cape Nao, East Point	38 44	0 14		
Aveiro	40 38.4	8 37.7	Cape St. Antonio *	38 48.5	0 10		
New Bar	40 38	8 43	Mongo Monte	38 43	0 8		
Old Bar	40 33	8 46					
Monte Caraculo	40 32	8 12	Balearic Isles.				
Columbra University	40 12.5	8 25	Iviza, Castle	38 54.3	1 29.25		
Cape Mondago *	40 12	8 54	Port De Serra, or North Point	39 8	1 34.5		
Figueira *	40 10	8 51	Port St. Antonio, Conjaers Grande,	39 0.4	1 16.5		
Port de Paredes	39 54	8 59	North Point				
Farihomia Rocks, Great Rock	39 29.3	9 32.7	Formentera, S. Pt., or Pt. Aguilas	38 38	1 25.5		
Bailengas Isles *	39 25	9 50.75	Majorca—Cabrera, South Point	39 5	2 55.5		
Cape Carvoeira *	39 21.8	9 25	Cape Salinas	39 14	3 6.5		
Monte Junto	39 10	9 8	Palma, Mole	39 34.1	2 41		
Cape Roca *	38 46	9 30	Dragonera Isle *	39 36	2 20.5		
Monte Cintra	38 47.2	9 25	North Point, or Cape Formentor	39 57	3 17.5		
Fort Sanxete	38 42	9 29	East Point, or Cape Pers	39 42	3 28.5		
Da Guia *	38 41.8	9 27.5	Minorca—Mahon, Mole *	39 52.5	4 23.5		
Buzio *	38 39.6	9 18.75	Cape Mola, or East Point	39 52.7	4 27.0		
St. Juhao,* Fort	38 40.3	9 20.5	Port Fornelles	40 3.5	4 11.2		
Lisbon, Marine Observatory	38 42.4	9 8.25	Cape Bajoli, or West Point	40 1	3 50		
Cape Espichel *	38 24.9	9 13	Cape Dortuch	39 55	3 53.5		

IX. ITALY.	Lat. N.	Long. E.
Port Maurizio, Mole Head.....	43 53.2	7 59.0
Cape della Mele.....	43 58	8 11
Finale, Church.....	44 9.9	8 19.0
Noli, Convent St. Francisco.....	44 11.9	8 22.75
Vado, Fort St. Lorenzo.....	44 15.5	8 24.5
Savona, Citadel.....	44 18.4	8 27.75
Polla Rock.....	44 25.0	8 46.0
Genoa ***.....	44 24.9	8 53.0
Point Chiapa.....	44 20.0	9 10.5
Cape Porto Fino, Fort.....	44 18.2	9 14.25
Sestri di Levante, Fort.....	44 16.4	9 25.5
Port Venere, North Entrance...	44 3.2	9 52.75
Tino Isle *.....	44 2.4	9 52.0
Spezzia, Castle.....	44 6.3	9 52.25
Pisa, Leaning Tower.....	43 43.5	10 24.0
Florence Cathedral.....	43 46.6	11 15.5
Leghorn *.....	43 32.7	10 17.75
Gorgona Isle.....	43 25.8	9 53.5
Capraia Isle, Castle, East side...	43 2.6	9 50.75
Piombino, Palace.....	42 55.7	10 31.75
Elba , North extremity.....	42 52.5	10 25
„ West extremity.....	42 46.2	10 6.5
„ Porto Ferrajo *.....	42 49.1	10 20.5
Palmajola Isle *.....	42 52.0	10 28.5
Pianosa Isle, West Point.....	42 32.7	10 5.25
Giglio Isle, South Point.....	42 19.2	10 56.0
Civita Vecchia *.....	42 5.7	11 44.0
Cape Linaro, Reef.....	42 2	11 49
Tiber, Fiumicino *.....	41 45.8	12 11.75
Rome , St. Peter's, Dome.....	41 54.1	12 27.25
Port Anzo *.....	41 26.9	12 42.25
Monte Circello, Church.....	41 12.7	13 5.25
Terracina, Palace.....	41 17.1	13 15.5
Gaeta, * Orlando Tower.....	41 12.4	13 34.75
Ponza Isle *.....	40 53.0	12 57.5
Ischia Isle, Castle, East Point...	40 43.9	13 57.7
Cape Miseno *.....	40 46.5	14 5.25
Pozzuoli, Church.....	40 49.2	14 7.25
Naples Observ., Capo di Monte..	40 51.8	14 15.5
„ Mole Light *.....	40 59.3	14 15.75
Mount Vesuvius, 3,900 feet....	40 49	14 26
Castellamare *.....	40 41.5	14 28.25
Point Campanella *.....	40 33.0	14 19.5
Capri Isle, South Point *.....	40 32.0	14 11.75
Salerno.....	40 40	14 45
Cape Licosa.....	40 14	14 53
Point Spartimento.....	39 59	15 15
Policastro.....	40 1	15 33
St. Eufemia.....	39 3	16 15
Cape Vaticano, Tower.....	38 27.2	15 52
Gioja.....	38 24	15 56
Scylla.....	38 14.5	15 45.0
Lipari Isles , Stromboli.....	38 46.7	15 13.75
Lipari Isle, Church.....	38 29.3	14 56.25
Vulcano Isle, Sulphur Works....	38 23.3	14 56.0
Alicudi Isle, Church.....	38 32.7	14 16.5
Ustica Isle, N.E. Point, Fort....	38 43.3	13 11.25
Faro Isle, East extremity *.....	38 15.8	15 41.25
Messina *.....	38 11.0	15 34.75
Milazzo *.....	38 16.1	15 14.0
Cefalu, Signal Station.....	38 2.2	14 1.75
Termini, Fort.....	37 57.5	13 41.0
Palermo Observatory, S.M.	38 6.6	13°21' 20"
Palermo *.....	38 8.2	13 22.25
Maritimo Isle, North Point, Castle	37 59.5	12 4.0
Trapani, Columbara *.....	38 1.8	12 31.25
Marsala, Cathedral *.....	37 47.8	12 26.25
Mazzara, Cathedral.....	37 38.7	12 35.5
Cape Sorello, or Granitola *.....	37 33.9	12 38.0
Cape San Marco, Fort, Tower...	37 29.3	13 0.5
Cape Bianco, Tower.....	37 22.4	13 16.5
Girgenti, Mole *.....	37 15.6	13 31.75
Palma, Marina.....	37 8.8	13 43.25
Alicata, Castle *.....	37 4.0	13 56.0

ITALY.	Lat. N.	Long. E.
Cape Scalambra, Tower.....	38 46.2	14 30.5
Passaro Isle, * Cape Passaro....	36 41.5	15 9.0
Cape Murro di Porco, Point....	37 0.0	15 19.0
Syracuse *.....	37 3.0	15 16.5
Cape Panagia, Point.....	37 6.5	15 17.0
Egosta *.....	37 12.8	15 13.25
Catania, Mole *.....	37 28.3	15 5.2
Mount Etna , 10,874 feet.....	37 43.5	15 0.0
Taormina, Telegraph.....	37 48.2	15 17.75
Scaletta, Fort.....	38 1.7	15 27.75
Malta , Valetta, Palace.....	35 53.8	14 31.25
St. Elmo, *.....	35 54.1	14 31.5
Spencer's Monument.....	35 53.0	14 30.75
S.E. extremity, Point della Mare.	35 49.7	14 34.75
Cape Demitri.....	36 4	14 8
Sardinia , Cagliari, St. Pancras..	39 13.2	9 7.75
Cape Spartivento, South Point...	38 52.5	8 52.5
Cavoli Isle, Cape Carbonara.....	39 6.1	9 31.5
Cape Teulada.....	38 51.9	8 39.25
St. Pietro Isle.....	39 9.7	8 17.75
Asinara Isle.....	41 5.8	8 18.25
Port Torres *.....	40 50.2	8 24.75
Cape della Testa *.....	41 14.2	9 9.25
Razzoli Isle *.....	41 18.3	9 20.75
Caprera Isle.....	41 12.9	9 29.0
Cape Comino.....	40 31.4	9 50.5
Calvi, Point Rivellata *.....	42 35.2	8 43.5
Giraglia Isle *.....	43 1.8	9 24.25
Corsica , Sanguinaires * Isles....	41 52.8	8 35.75
Ajaccio, Cathedral.....	41 55.0	8 44.75
Cape Muro, S.W. Point.....	41 44.5	8 39.5
Bcnifacio.....	41 23.8	9 9.25
S. extremity, Mount Pertusato *.	41 22.2	9 11.25
Porto Vecchio *.....	41 35.2	9 20.75
East extremity, Fiorentino Tower	42 17.0	9 33.75
Bastia, Mole *.....	42 41.8	9 27.0
Finocchiarola Tower.....	42 59.3	9 28.0
Reggio	38 5.9	15 40.0
Cape Spartivento.....	37 56	16 4
Cape Stilo.....	38 29.3	16 37
Cape Rizzuto *.....	38 57	17 1
Cape Nau or Colonna.....	39 6	17 14
Point de Tronta, Tower.....	39 35	16 47
Roseto.....	39 59	16 34
Taranto Citadel.....	40 27	17 14
Cape St. Vito *.....	40 24	17 13
Gallipoli, St. Andrea Isle, N. Pt.*	40 3	17 56
Cape Leuca, Church.....	39 47.9	18 22.65
Cape Otranto, Telegraph.....	40 8.7	18 30.0
Brindisi, * Castello di Mare....	40 39.4	17 56.6
Monopoli * Telegraph.....	40 57.3	17 18.55
Mola, Telegraph.....	41 3.9	17 6.0
Bari, * Belfry.....	41 7.9	16 52.6
Barletta, * Telegraph.....	41 19.4	16 17.75
Manfredonia, Telegraph.....	41 37.9	15 55.25
Varano, Tower.....	41 55.0	15 48.25
Termoli, Telegraph.....	42 0.4	15 0.25
Vasto Ammone, Belfry.....	42 6.8	14 42.9
Ortona, Belfry.....	42 21.5	14 24.4
Pescaro, Tower.....	42 27.0	14 13.8
Tronto River, Torre Nuova.....	42 54.4	13 54.8
Fermo, Cathedral.....	43 9.9	13 43.6
Pianosa Isle, Signal, East end....	42 13.7	15 45.1
Pelagosa Isle, Signal, West Point.	42 23.7	16 15.8
Conero Mount, Telegraph.....	43 33.3	13 36.5
Ancona , Mole Head *.....	43 37.7	13 30.2
Sinigaglia, * Cathedral.....	43 43.0	13 12.9
Fano *.....	43 51.3	13 0.9
Pesaro *.....	43 55.7	12 54.4
Rimino, * Casa Garimpi.....	44 3.8	12 33.8
Cesenatico *.....	44 13	12 24
Cervia, * Città Tower.....	44 15.8	12 20.9
Ravenna , * Città Tower.....	44 25.3	12 11.9
Po di Maestra, Battery.....	44 59.5	12 26.0

X. AUSTRIA, GREECE.		Lat. N.	Long. E.	TURKEY, S. RUSSIA.		Lat. N.	Long. E.
Venice, San Marco.....	45	25.9	12 20.15	Cerigotto Isle, Summit.....	35	50.1	23 18.0
Grado,* Church.....	45	40.3	13 22.9	Spezzia Isle, 812 feet.....	37	15.3	23 8.75
Trieste, Castle Clock.....	45	38.6	13 46.2	Napoli di Romania.....	37	33.6	22 48.0
Cape d'Istria, San Lazzaro Belfry.	45	32.7	13 43.6	Hydra, Summit, 1,939 feet.....	37	19.5	23 28.0
Point Bassania *.....	45	27.3	13 28.9	Poros Isle, St. Nicolaus.....	37	30.9	23 28.25
Port Pirano, San George's Belfry.	45	31.6	13 33.9	Egina Isle, Mount St. Elias.....	37	41.9	23 30.0
Rovigno,* Steeple.....	45	4.9	13 37.7	Megara, Tower.....	37	59.8	23 20.5
Pola, San Francesco Belfry.....	44	52.3	13 50.4	Piræus **.....	37	56.2	23 38.0
Cape Promontore,* Mt. Gradina.	44	48.8	13 54.3	Athens, Parthenon.....	37	58.1	23 43.75
Mount Maggiore, Signal.....	45	17.2	14 11.9	Cape Colonna, Temple.....	37	38.8	24 1.75
Fiume, Clock Tower.....	45	19.6	14 26.33	Macronisi Isle, South Point.....	37	38.5	24 6.75
Porto Re, Castel Nuovo.....	45	16.7	14 33.8	Cape Marathon.....	38	7.1	24 3.75
Cherso, Cathedral.....	44	57.7	14 23.8	Zea Isle, Mount St. Elias.....	37	37.3	24 21.75
Unie Island, Church.....	44	38.3	14 14.1	„ Port St. Nicolao *.....	37	39.4	24 20.0
Lossini Isle, Mount d'Osero.....	44	40.5	14 21.5	Thermia Isle, Summit.....	37	26.2	24 23.75
Sansego Isle, Mount Garbe.....	44	30.9	14 7.9	Piperi Isle, Summit.....	37	18.2	24 32.0
Premuda Isle, Summit Signal....	44	20.2	14 36.5	Siphanto Isle, North Point.....	37	2.7	24 38.5
Nona, Cathedral.....	44	14.6	15 10.8	Milo, Mount St. Elias.....	36	40.5	24 23.5
Lunga Isle, Port Tajer, Tajer Rock	43	51.9	15 11.3	Policandro Isle, Summit.....	36	37.1	24 55.25
Zara, San Simone Steeple.....	44	6.8	15 13.5	Nio Isle, Summit.....	36	42.7	25 21.0
Spalatro, Cathedral.....	43	30.4	16 26.3	Santorin Isle, Mount St. Elias...	36	22.0	25 28.75
St. Andrea Isle, Summit.....	43	1.6	15 45.23	Amorgo Isle, Summit near middle	36	50.7	25 55.75
Pomo Islet, Summit.....	43	5.4	15 27.4	Stampalia, S.W. Summit.....	36	32.2	26 19.75
Lissa, Mount Hum, Signal.....	43	1.7	16 6.63	Naxos Isle, Mount Zia, 3,290 feet	37	1.8	25 31.25
Lagosta I.,* Mt. San Giorgio, Chap.	42	45.0	16 51.5	Paros Isle, Mount St. Elias.....	37	2.7	25 11.5
Cazza Isle, Summit, Signal.....	42	46.0	16 30.63	Syra Isle, Gaidaro *.....	37	25.5	24 39.0
Meleda Isle, Port Palazza, Palace.	42	47.0	17 22.6	Tinos Isle, Summit, East part...	37	35.0	25 14.5
Ragusa, Fort on Mole.....	42	38.3	18 6.63	Andros Isle, Mt. Kovari, 3,900 ft.	37	50.1	24 50.5
Port Ostro *.....	42	22.8	18 30.6	Negropont, Fort Karababa.....	38	27.7	25 35.25
Cattaro, Sanità.....	42	25.4	18 46.0	„ Cape Doro, Islet off.....	38	9.4	24 36.3
Antivari, South Point.....	42	2.3	19 6.15	„ Cape Koumi.....	38	38.7	24 9.7
Dulcigno, Mole.....	41	53.8	19 10.4	Volo, Fort.....	39	24.0	22 56.5
Durazzo, Mole.....	41	17.5	19 26.3	Skyros Isle, Summit.....	38	49.7	24 37.25
Aulona, Dogana.....	40	27.2	19 26.06	Skopelos Isle, Summit.....	39	8.2	23 42.0
Cape Linguetta, 2,290 feet.....	40	26.7	19 17.0	Skiathos, Summit.....	39	10.4	23 29
Palermo, Fort.....	40	2.9	19 47.9	Mount Pelion (Patras), 5,310 feet	39	26.5	23 3
Fano Isle, S.W. Summit.....	39	50.2	19 19.5	Mount Ossa (Kissova), 6,407 feet	39	48.0	22 42.0
Oorfu,* Lighthouse.....	39	37.6	19 56.2	Salonika.....	40	38.8	22 57.25
„ Vido, Landing Cove.....	39	38.7	19 56.2	Cape Cassandra.....	39	56.7	23 22.0
„ Lefchimo Point *.....	39	28.1	20 4.0	Cape Paillari.....	39	55.2	23 45.25
Parga, Citadel.....	39	16.4	20 23.0	Cape Drapano, 880 feet.....	39	56.5	23 57.25
Prevesa, Fort Giorgio.....	38	56.2	20 44.2	Mount Athos, Summit, 6,349 feet	40	9.5	24 20.0
Paxo Isle, Laka *.....	39	13.2	20 9.0	Thaso Isle, Summit.....	40	41.7	24 42.75
„ Port Gajo *.....	39	11.5	20 12.5	Enos.....	40	42.0	26 5.0
Antipaxo Isle, East Point.....	39	8.7	20 5.75	Xeros Isle.....	40	36.5	26 44.0
Santa Maura *.....	38	50.5	20 42.75	Samothraki, West Point.....	40	28.2	25 27.0
„ S. extr. Cape Ducato.....	38	33.5	20 32.75	Lemnos, West Point.....	39	58.7	25 2.0
Oephalonia, North extremity...	38	28.5	20 33.0	Imbros, West Point.....	40	7.2	25 40.0
„ Port Argostoli, Hook Point	38	11.2	20 28.5	Dardanelles, Asia Castle.....	40	9.0	26 24.5
„ South Point, Cape Skala...	38	3.0	20 46.5	Gallipoli *.....	40	24.0	26 39.75
Zante, North Point, Cape Skinari.	37	56.5	20 41.5	Constantinople, St. Sophia.....	41	0.3	28 59.25
„ South Point, Cape Kieri..	37	38.5	20 49.5	Bosphorus, Europe *.....	41	14	29 7.25
„ Port *.....	37	47.5	20 55.0	Varna, Mosque.....	43	12.0	27 56.5
Krio Nero *.....	37	48.7	20 54.5	Cape Shabler *.....	43	32.7	28 37.7
Oxia Isle, Peak, 1,247 feet.....	38	18.7	21 7	Danube River, Soulineh Mouth *.	45	9.3	29 40.5
Messalonghi.....	38	21.9	21 25.75	Serpents' Isle *.....	45	15.5	30 14.2
Roumelia, Castle.....	38	19.5	21 46.25	Tsaregradskoe Mouth **.....	46	4.8	30 29.75
Lepanto, Centre, Minaret.....	38	23.4	21 50.0	Cape Fontane *.....	46	22.8	30 44.5
Corinth, Acropolis.....	37	53.4	22 52.75	Odessa, Cathedral.....	46	28.9	30 45.5
Morea Castle, Centre.....	38	18.5	21 47.0	Kinbourn *.....	46	35.4	31 29.25
Patras.....	38	14.5	21 44.75	Nicolaeff, Observatory.....	46	58.2	31 58.0
Cape Papas, Ruined Fort.....	38	12.7	21 23.5	Kherson, Cathedral.....	46	37.7	32 38.0
Cape Charenza, Ruin.....	37	56.5	21 9.5	Cape Eskiforos *.....	45	20.7	32 29.7
Cape Katakolo.....	37	37.7	21 19.0	Eupatoria.....	45	11.7	33 21.75
Stamfanes Isle *.....	37	15.3	21 1.5	Cape Khersones *.....	44	35	33 22.25
Cape Koanelo.....	37	10.4	21 35.5	Sebastopol, Church.....	44	37.9	33 29.5
Navarino, Mosque.....	36	54.6	21 41.75	Cape Aitodor *.....	44	25.3	34 7.7
Modon *.....	36	48.4	21 41.5	Kaffa, or Theodosia.....	45	1.6	35 24.0
Cape Gallo.....	36	42.9	21 52.75	Cape Takli *.....	45	5.9	36 27
Cape Kephali.....	36	53.5	22 8.0	Yenikaleh *.....	45	23.1	36 39.25
Cape Grosso, Summit.....	36	29.1	22 22.25	Cape Berdianski *.....	46	38.2	36 48.25
Cape Matapan.....	36	23.0	22 29.2	Taganrog, St. Michael Church...	47	12.2	38 57
Eurotas River, Mouth.....	36	48.2	22 41	Anapa, Church.....	44	54.1	37 18.5
Cerigo Isle, South extremity....	36	7.7	22 59.75	Soukoun Kaleh, Fort.....	42	59.3	40 59.75

XI. AFRICA.		Lat. N.	Long. E.	AFRICA.		Lat. S.	Long. E.
Nile, West or Old Boghaz Mouth	31 30.5	30 25.75		Cape Lopez	0 36.0	8 43	
Rosetta, English Consulate	31 24.3	30 28.0		River Lougo, Entrance	4 39.5	11 45	
Damietta	31 25	31 47		Congo or Zaire River, S. Entrance	6 4.6	12 15	
Cairo, Tower of Janissaries	30 2.1	31 15.5		San Paolo de Loando	8 48.1	13 15.5	
Aboukir Castle	31 20.5	30 5.75		San Filippo de Benguela	12 33.9	13 24	
Alexandria, Point Eunostos *	31 11.5	29 51.5		Cape Negro, Diaz's Pillar	15 40.7	11 58	
Itas el Kannas	31 17	27 53		St. Helena Bay, West Point	32 42.2	17 54.25	
Dernah Marabout	32 46.0	22 40.75		Saldanha Bay, Schapen Isle, W. Pt.	33 4.2	18 1.0	
Maras Sousa, Arsenal	32 54.9	21 56.5		Table Bay, Green Point **	33 54.2	18 24.5	
Benghazi, Castle	32 6.8	20 2.75		Devil's Peak, 9,315 feet	33 57.2	18 31.75	
Tripoli, Pasha's Castle	32 53.9	13 11.0		Cape Observatory, S.M.	33 56.0	18 28.45"	
Monastir, Fort Ghadir	35 45.4	10 49		Simon's Bay, Dockyard	34 11.3	18 26.0	
Cape Bon	37 4.8	11 3.5		Cape Agulhas *	34 49.7	20 0.75	
Pantellaria Isle	36 51.2	11 54.75		Cape Recife *	34 1.0	25 41.75	
Tunis, Fondouc	36 48.0	10 24.25		Algoa Bay, Commandant's House	33 57.5	25 36.5	
Cape Carthage *	36 52.4	10 20.25		" St. Croix Isle, Peak	33 47.6	25 48.5	
Bona, Lion Point *	36 54.5	7 46.3		Bird Isle, East Point **	33 52	26 14	
Ras el Hamrah *	36 58.0	7 47.3		Cape Natal	29 53.0	31 2.25	
Philippville *	36 52.8	6 52.8		Delagoa Bay, Cape Collato	26 4.0	33 1.0	
Zrignia Isle	36 56	6 52		Cape Corrientes	24 7.5	35 30.5	
Cape Boujaroun, North Point	37 6.3	6 25.8		Sofala River, Fort	20 10.7	34 46.0	
Dydjel *	36 50.0	5 43.8		Quillimane or Zambesi R., N. Point	18 1.4	37 1.5	
Bo. gie *	36 45.5	5 4.3		Mozambique, St. George's Isle	15 2.2	40 48.5	
Cape Carbon (provisionally) *	36 47	5 5		Cape Delgado	10 41.2	40 39.75	
Dellys, N.W. part of City *	36 55.5	3 55.0		Zanzibar, South Point	6 27.7	39 33.0	
Algiers, Mole *	36 47.3	3 4.3		Madagascar, S. extr. C. St. Mary	25 38.9	45 7.0	
Cherchel, Fort *	36 36.8	2 11.8		Cape St. Vincent	21 54.4	43 20.5	
Cape Tenez *	36 32.0	1 20		N.W. extremity, Cape St. Andrew	16 11.4	44 31.0	
Mostaganem *	35 56.0	0 5.8		Noss Beh, North Point	13 12.4	48 18.75	
	Lat. N.	Long. W.		North extremity, Cape Amber	11 57.5	49 19.0	
Arzeu Fort *	35 51.7	0 17.2		East Cape, outer Island	15 15.8	50 31.5	
Cape Ferrat	35 54.3	0 22.7		St. Marie Isle, Quail Isle, Estabmt.	17 0.0	49 54.0	
Oran *	35 44.3	0 41.2		Europa Isle, Basses de India	22 22.5	40 24.25	
Cape Tres Forcas	35 28	3 0		San Juan da Nova	17 8.5	42 50	
Ceuta *	35 54	5 18		Johanna, Town	12 11.0	44 25.1	
Tanger, Consul's House * ?	35 47.2	5 48.5		" Peak, East Part	12 15	44 27.1	
Madaira, East Point	32 43.4	16 39.5		Comoro, S.E. Point	11 54	43 33	
Funchal, British Consulate S.M.	32 37.7	16 54.45"		Glencoe Isles, West one	11 34.8	47 24	
Teneriffe, Santa Cruz, Brit. Cons.	28 28.2	16 14.75		Assumption Isle, Hummock, S.E. Pt.	9 46	46 34	
Ferro, West extremity of Canaries	27 42.5	18 9.7		Aldabra Isles, N.W. Point	9 23	46 12	
Assoras, St. Michael, Delgada *	37 44.2	25 40.7		Mauritius, Pt. Louis, Cooper's L.M.	20 9.7	57 31.45"	
Pt. Ferrara, * W. Pt. St. Michael	37 51.7	25 52.3		" Grand Port, Queen's Batt.	20 22.6	57 45.75	
Tercera Angra, Custom House	38 38.9	27 13.75		" Peter Botte, 2,600 feet	20 11.7	57 36.75	
Cape Verde, St. Antonio, N. Point	17 12.0	25 5.75		Bourbon, St. Denis **	20 51.5	55 29.75	
St. Vincent, Porto Grande, Bird Isle	16 54.7	25 1.25		" Point of Bel Air *	20 53.2	55 38.75	
Mogador, West Coast of Africa	31 30.5	9 46.25		Rodriguez Isle	19 41	63 25	
Cape Blanco	20 46.5	17 4		Bank of Nazareth, Cocoa Isle	16 48.9	59 32.75	
Senegal, St. Louis *	16 0.8	16 33.0		Tromelin Isle	15 52	54 37	
Cape Verd, extremity	14 43.1	17 34		Saya da Malha Bank	8 35	58 58	
Goree Isle *	14 39.9	17 24.5		Agalegas Isles and Reef	10 21.5	56 38	
River Gambia, Bathurst, Flag-st.	13 28.0	16 35.0		Farquhar Isles, North Point	10 7	51 8	
De Los Isles, Crawford, Eng. Estab.	9 27.4	13 48.0		S ychelles, N. extremity, Bird Isle	3 42.7	55 15.75	
Cape Sierra Leone *	8 30.0	13 18		" E. extremity, Frigate Isle	4 35.2	56 1.25	
Freetown, North Battery	8 29.9	13 14.5		" Mahé Isle, Victoria	4 37.5	55 30.25	
River Gallinas, Kamasoun Isle, West Elbow	7 0.1	11 38.75		Almirante Isles, West extremity	6 6	52 58	
Monrovia, Government House	6 19.1	10 49.0		" S. extremity, Isle de Neuf	6 13	53 13	
Bassas, American Agent's House	5 54.1	10 4.0		Isle Platte	5 49	55 28	
River Sanguin, Point Sanguin	5 12.7	9 20.2		Chagos, Salomon Isles, L. de Passe	5 18	72 12.75	
Cape Palmse *	4 22.1	7 44.25		Di go Garcia, East Entrance	7 13.5	72 23.0	
Cape Coast Castle *	5 5.4	1 13.75			Lat. N.	Long. E.	
Accra, Fort James	5 31.8	0 11.5		Megaduro, East Coast of Africa	2 1.8	45 24.7	
Lagos, East Point	6 26	3 26.25		Ras al Khyf	7 43.7	49 48.0	
River Benue, N.W. Point	5 46.0	5 4		Ras Hafin, East Point	10 27.0	51 22.3	
River Forcados, Entrance, S. Pt.	5 22.0	5 19.25		Ras Anin, East Point	11 50.5	51 16.1	
River Quorra or Niger, E. Point	4 17	6 4		Soetra, Gollensir, Moque	12 41.3	53 29.4	
River Bonny, East Point	4 23	7 8		" K. extremity, Ras R'droueh	12 24.3	54 30.75	
Old Calabar, Tom Shot's Point	4 36	8 18		" Tamarda, Moque	12 39.0	53 59.25	
Cape Camerouns	3 55	9 30		Meyet, or Burnt Isle, Centre	11 13.0	47 13.9	
Fernando Po, Clarence Cove, Adelaide Isle	3 46.0	8 47.5		Berberah, extr. of Sandy Point	10 26.3	44 57.6	
Ascension, Barrack Square	7 55.5	14 25.5		Ghubbat Kharab, Entrance Islet	11 33.0	42 39.7	
St. Helena, Observatory	15 55.0	5 44.0		Perim Isle, Lighthouse *	12 38.0	43 20.1	
Tristan d'Acunhu, Waterfall N. s.	37 1.9	12 17		Sunkum	19 7	37 20	
				Jubal Isle, East Summit	27 37.7	33 48.0	
				Snes	29 58.6	32 34.25	

XII. ASIA.	Lat. N.	Long. E.	ASIA.	Lat. N.	Long. E.
Trebisonde, E. extremity	41 1.0	39 46.0	Cyprus, Larnaka, Consulate ...	34 55.2	33 37.75
Cape Yazon.	41 8.5	37 41.5	„ W. extr. C. Epiphanius.	35 6.3	32 14.5
Samsoun, N. extremity City	41 18.2	36 21.25	„ N.E. extr. C. Andrea..	35 41.7	34 35.5
Sinope, Castle.	42 2.2	35 12.5	„ S'most extr. C. Gatto .	34 32.8	32 59.75
Cape Kerempeh, N.W. Point	42 12	33 17.25	Toor, Harbour	28 14	33 36.25
Penderekli *	41 17.1	31 27	Jubal Isle, East Summit	27 37.7	33 48.0
Kephken Adassi Isle, Fort	41 13.2	30 17.5	Kosseir, Town	26 6.8	34 16.25
Asia *	41 13.0	29 9.4	Tirahu Isle, Peak	27 55.2	34 34
Tenedos, Cape Baba Fort	39 28.2	26 4.5	Moilah, High Peak, 9,000 feet..	27 37	35 45
Mount Ida, 5,750 feet	39 42.0	26 50.5	Palinurus Reefs	24 6	37 7
Mitylene, East Point	39 0.7	26 37.7	Jeddah, Mosque E'ward of Town	21 28.3	39 13.0
„ Mount Olympus, 3,079 ft	39 4.2	26 22.0	Mosha	13 20	43 12.0
„ West Point, Cape Sigri .	39 10.7	25 50.0	Bab-el-Mandeb, Peak	12 41.2	43 23.75
Smyrna, Mill on Daragaz Pt., S.M.	38 26.5	27 9.42"	Ras 'Arah, Low Point	12 37.5	43 53.26
Vourla Scala, Fountain	38 21.7	26 47.5	C. St. Antonio, S. Bluff, 2,085 ft.	12 41.0	44 7.6
Cape Karabournou, Point.....	38 39.9	26 22.75	Ras K'au, Cape.....	12 39.7	44 24.1
Scio, North Summit.....	38 33.7	26 1.25	Mount Hasan, Sugar-loaf.....	12 44.8	44 50.25
Venetico Isle, off S. Point of Scio.	38 8.0	26 2.0	Ras Majallab Haldi	12 43.1	44 50.6
Ipsara, Fort at South Point	38 32	25 35	'Aden, Back Bay, Steamer Point.	12 46.6	44 57.6
Cape Blanco	33 16.6	26 14.75	Mount Shamsan, Summit	12 45.5	44 59.6
Cape Koraka.....	38 6.5	26 36.75	Cape 'Aden, South Point.....	12 45.1	45 0.6
Scalanuova, Koosh Isle.....	37 52.0	27 16.5	'Aden, North Point of Sirah Isle	12 46.25	45 1.3
Samos, West Summit	37 43.8	26 38.5	Sughra, Sheikh's Castle.....	13 21.5	45 37.6
„ South Point, Cape Colonna	37 38.3	26 52.7	Mount Fudhli, West Summit. ..	13 31.5	45 50.6
Nicaria, West Point	37 31.2	25 59.5	Maghatain, Point	13 24.5	46 23.6
„ Beacon, 3,390 feet	37 32.2	26 4.7	Mount Hisn Ghorab, East Point.	13 59.3	48 16.1
Gaidaro, Summit	37 28.1	26 58.75	Makalleh, Government House ..	14 13.7	49 3.25
Arki, North Point	37 24.9	26 44.5	Ras Sharmah, Point	14 48.5	49 53.9
Patmos, Prasso Isle, South Point .	37 16.0	26 34.75	Merbat, Town.	16 59.0	54 38.6
Lipso, S.W. Point.....	37 18.2	26 44.25	Hallaniyah Isle, N.E. Bluff	17 32.7	56 2.45
Lexo, Mount Klidi	37 10.7	26 51.5	Cape Isolette, Islet off.....	19 0.4	57 48.6
Kalymno, Mount Passiva	36 58.8	27 0.0	San Carlos Banks, S.W. extremity	19 20.0	57 48.6
Mount Samsoun	37 39.8	27 9.0	„ N.E. extremity	19 32.5	58 4.9
Cape Monodendri, Ruin	37 21.3	27 13.0	Hamar-al-Nafur Isle.....	19 47.6	57 46.3
Kos, West Point.....	36 43.0	26 49.5	Palinurus Bank, South Point...	19 49.5	58 14.9
Nicero, Summit, 2,270 feet	36 35.2	27 11.0	Ras Abu-rasas, Masirah Isle. ...	20 10	58 36.45
„ West Islet off, North Point	36 35.6	27 3.5	Ras Shebali.....	20 57.5	58 47.9
Piscopia, Summit.....	36 26.1	27 21.0	Persian Gulf, Ras-al-Hed	22 32.6	59 47.9
Karki, S.W. Point	36 12.2	27 33.25	Ras Jibsh	21 27.5	59 21.5
Rhodes *	36 26.9	28 16.25	Ras Abu Daud, Rocky Point ...	23 19.1	58 55.5
„ W. Point, Cape Monolitho	36 8.7	27 43.25	Masrat, Saddle Hill, 1,340 feet	23 35.1	58 35.05
„ S. Point, C. Prasso Nisi.	35 52.4	27 47.0	Mount Nakli, Gt. Peak, 6,270 ft.	23 25.0	57 56.8
Khina Isle, Rock.....	35 51.2	27 56.0	Ras Jashk, Tomb on Point.....	25 38.0	57 46.2
Scarpanto Isle, South Point	35 23.5	27 10	Great Quoin, highest part	26 30.0	56 30.9
Candia, Town, Minaret *.....	35 21.0	25 8.25	Ras-al-Kuh, extreme S. of Creek.	25 47.4	57 18.8
„ Cape Krio.....	35 16	23 31	Kuh-i-Mubarek.....	25 50.6	57 18.73
„ Sordi Isle	35 34.3	23 27.25	Ummal Fyarin, highest part ...	26 10.8	56 33.1
„ N. extremity Cape Spada	35 40.5	23 44.25	Hormuz, S.E. Bastion, Fort	27 5.8	56 27.6
„ Khania *.....	35 30.8	24 0.0	Bander Abbas, S.W. Bastion ..	27 10.5	56 17.0
„ Cape Meleka.....	35 35	24 8.5	Henjam Isle, White Mosque....	26 40.8	55 53.9
„ Cape Sidera, Summit ...	35 17.7	26 18.75	Basiduh, Portuguese Chapel....	26 29.2	55 16.3
„ E. extremity C. Salomon	35 9.2	26 19.5	Mt. Bostaneh, Tower Pk., 1,750 ft.	26 32.9	54 41.7
„ Christiana Isles, S'most .	34 53.1	26 7.7	Tumb I., N.E. Corner, Hummock	26 16.2	55 19.7
„ Cape Matala.....	34 55.1	24 45.25	Kais Isle, West Point.....	26 32.7	53 54.4
„ Mount Ida	35 13.3	24 47.0	Sheikh Sho'aib, West Point	26 50.4	53 9.6
„ Sphakia	35 14	24 13	Ras Nabend, Tree above.....	27 21.3	52 37.9
Gozzo Isle, West Point.....	34 52.0	24 2.2	Aslul Notch, 4,870 feet.....	27 33.6	52 37.7
Boudroom, Castle	37 2.0	27 27.5	Barn Hill, 4,660 feet.....	27 48.0	52 13.9
Cape Crio, West Point	36 41.0	27 23.5	Asses' Ears, South Peak, 2,500 ft.	28 29.0	51 11.7
Makri, Theatre	36 37.2	29 9.75	Bu-shehr, British Flag-staff ...	28 59.1	50 50.05
Khelidonia Isle, South Islet	36 9.5	30 26.25	Khareg Isle, Flag-staff	29 15.4	50 20.6
Adalia, South Pier Head.	36 52.2	30 45	Basrah, Ma'kil, Consulate.	30 34.0	47 48.9
Cape Anamour	36 0.8	32 49	Koweit, Hill Fort to S.E.....	29 16.9	48 3.5
Cape Cavaliere	36 7.5	33 43.7	Karachi, Minorah Point *.....	24 47.3	66 58.2
Lamas River.....	36 33.8	34 17.75	Diu, Town, Flag-staff	20 42.3	71 0.1
Alexandretta, Consulate Flag-staff	36 35.3	36 9	Perim Isle *	21 35.3	72 20
Cape Possidi	35 52.2	35 49.0	Vaux's Tomb, Taptee *.....	21 5.7	72 37.6
Latukia *.....	35 30.5	35 46.0	Bombay, Observatory, S.M.	18 53.7	72 48.45
Bairout, British Consulate	33 54.5	35 28.25	„ Lighthouse *.....	18 53.7	72 48.75
Sidon, Castle.....	33 34.1	35 21.75	New Goa, St. Ann's Light *....	15 28.3	73 52.1
St. John d'Acre, Bastion Mar. Gate	32 55.0	35 2.5	Mangalur, Flag-staff.....	12 52	74 49.9
Cape Carmel.....	32 51.2	34 57.7	Kananur, Point, Flag-staff	11 51.2	75 21.65
Ascalon, Ruins	31 39.0	34 31.0	Tellicherri *	11 44.9	75 29.15
El Arish	31 5.5	33 55.75	Kolikod, * Flag-staff	11 15.2	75 46.4

XIII. ASIA.		Lat. N.	Long. E.	ASIA.		Lat. N.	Long. E.
Trevandrum Pagoda	8 29.0	76 55.8		Kalantan, Entr. of R. to E.—d.	6 11.9	102 20.8	
Cape Kumarin, Peak	8 23.2	77 30.5		Cape Patani, N.E. Point	6 58.0	101 18.6	
Colombo *	6 56.1	79 49		Singora, Pulo Tessa, S.W. Pt. .	7 13.9	100 36.2	
Point de Galle, * Ceylon	6 1.8	80 13		Koh Krah, S.E. Point	8 24.8	100 45.5	
Adam's Peak, 7,000 feet	6 52	80 29		Sing I., White Rock, East side .	11 3.7	99 31.4	
Trincemali, * Fort Frederick ..	8 36	81 14		Bangkok, Patnam Flag-staff ..	13 35.9	100 35.6	
Laccadives, Padua Bank, N. Pt. .	13 37	72 32		C. Liact, Meera I., N.W. Rock .	12 35.1	100 56.9	
East extrem. Elikalpeni Bank ..	11.13	73 56		Luemur Pilot Isle, Peak	12 57.5	100 39.0	
Seubeli Par, South extremity ..	9 56	72 9		Chentaban River, Chula Isle ..	12 27.7	102 4.4	
Ministry, betw. 8° & 9° Channel .	8 17	73 3		Pulo Obi, Square Ek., S.W. Pt. .	8 25.6	104 48.8	
Maldives , North extremity	7 6	72 53		Pulo Panjang, S.W. Bay	9 18.2	103 28.2	
S. extr. Addoo Atoll, Gung I., E. Pt.	0 41.5	73 6		Rocky Isle, Kamput, Centre ..	10 27.9	104 11.9	
Nagapattam, Flag-staff	10 45.6	79 50.25		Teeksou, N.W. side	9 57.2	104 49.1	
Tallangambadi (Tranquebar) ..	11 1.5	79 50.25		Cape St. James	10 17	107 5	
Kudalur, Town and River	11 43.5	79 46.0		Falso Cape, Varela, Camranch .	11 44	109 12	
Pondicheri * (Pondicherry)	11 55.7	79 49.5		Quinhone Harbour, Entrance ..	13 44	109 14	
Madras , Observatory, S.M.	13 4.1	80°14'19".5		Pulo Condora Isles	8 40	106 41	
" Light, Fort St. George	13 4.7	80 18.5		Indan , Tinhon Isle	18 39.7	110 27.4	
Pulicat, Flag-staff	13 25.1	80 18.25		Taya Isles, North Isle	19 58.8	111 16.0	
Point Dier *	15 57.5	81 11		" South Isle	19 48	111 11.4	
Godavari Point *	16 48	82 18		Hallingshen I., Twins at S.W. Pt.	21 34	111 49.5	
Vishakpatnam, Battery	17 40 8	83 16.75		Grand Ladrone	21 57	113 42.5	
Falso Point *	20 19.4	86 44		Macao, Flag-staff	22 11.4	113 31.2	
Mypurra Isle, South Point	20 41.3	87 7.25		Onanton , English Factory	23 6.9	113 14.2	
Pifist Ridge	20 50	87 39		Hoog Kong, Point Albert, S.M. .	22°16'27"	114° 9'57"	
East Channel *	21 3	88 12		" Kowloon Point, W. Battery .	22°17'20"	114° 9'22"	
Kedjer *	21 50.3	87 56.0		Raleigh Rock	22 2.0	113 46.2	
Sangor Isle, * West Point	21 38	88 1		Ninepin Rock	22 15.7	114 21.3	
Calcutta , Fort William, Fl.-st. .	22 33.5	88°19' 40"		Mendosa Island, Summit	22 30.7	114 49.2	
Chittagong, or Islamabad, Fl.-st.	22 20	91 48.0		Pedro Blanco Rock	22 18.5	115 6.1	
Kutubcha Isle *	21 52.6	91 50.25		Chino Peak	22 44.4	115 46.0	
Elephant Pt.-nt.	21 10	92 3		Cupchi Point, Hill	22 48.1	116 3.5	
Mosque, or Fakir's Point *	20 6.7	92 54.0		Cape of Good Hope	23 14.0	116 46.2	
Akyab Harbour, Flag-staff	20 8.4	92 54.25		Tongsang Harbour, Fall Peak .	23 47.3	117 36.0	
Great Soaya *	20 5.2	92 54.0		Amoy Isle, Citadel	24 28.0	118 3.2	
Kyok Phya, Flag-staff	19 26.4	93 32.75		Dodd Island, Summit	24 26.3	118 28.3	
Cape Negrais	16 1.5	94 12		Chin-chu Harbour, Piai Isle .	24 49.2	118 40.2	
Andamans , Preparis Isle, N. end .	14 56	93 38		Lam-yit Isle, High Cone	25 12.0	118 34.2	
Little Andaman, South Point ..	10 26	92 38		Haitan Isle, Klangshan Peak .	25 36.3	119 49.9	
Cor Nicobar, S. of 10° Channel .	9 10	92 48		River Min, Temple Point	26 8.4	119 36.9	
Great Nicobar, South Point	6 45	93 54		Changshi Isle, highest Peak ..	26 14.0	120 0.9	
Rangoon, Dagon Pagoda	16 47	96 10		Tungying Isle, Peak	26 23.2	120 30.8	
Amnera	16 5	97 33		Double Peak Isle, highest	26 36.1	120 10.4	
Merguis , St. Matthew's I., Sum. .	9 58.0	98 11.25		Tas Isles, Eastmost	26 59.2	120 43.0	
" Hastings's Harbour, Peak ..	10 5.1	98 11.0		Pihquan Peak	27 18.8	120 28.0	
Junk Seilon, or Salang I., S. Pt.	7 48	98 18		Namquan Harbour, Bate Isle ..	27 8.3	120 25.0	
Achin Head, or King's Point ..	5 36	95 11		Port Namkii, East Horn	27 20.3	121 5.8	
Diamond Cape	5 14	97 38		Tai-chan Islands, Hanchu Isle .	28 23.3	121 54.4	
Penang I., George, Ft. Cornwallis	5 25.1	100 30.25		Chuh-seu Isle, Summit	28 40.5	121 46.6	
Malacca, * Flag-staff	2 10.5	102 15		Kweahan Isles, Patahecock ..	29 21.9	122 12.9	
Singapore , Fort Fullerton	1 17	103 51' 18"		Buffalo's Nose Isle, Summit ..	29 36.2	122 0.6	
Petra Branca, Horsburgh *	1 20	104 26		Nimrod Sound, Middle Isle ..	29 34.3	121 42.5	
Tambelan Isles, Great Tambelan	1 0	107 35		Chusan Isle, Tinghsu—Ob. Spot .	30 0.4	122 4.5	
Anumban, N.E. extreme	8 15	108 35		Chukes Isle, Peak	29 54.0	122 24.5	
Natunas, S. extrem. Sededap Isle	3 34	108 1		Qairnmore Rock	30 42.2	122 33.8	
Great Natuna, North Point	4 16	108 12		Chapu, Battery	30 36.0	121 2.2	
Labuan Isle, West Point	5 15.1	115 7		Yung River, Chihai Citadel ..	29 57.1	121 42.3	
Kuching Hill, Entr. Sarawak R. .	1 33.4	110 22		Shaweshan Isle, Summit	31 25.2	122 13.2	
Balabac Isle, South Point	7 48	117 52		Wusung River, Fort A	31 23.5	121 29.4	
Boulanhaw Hill, North extr. .	8 40	117 26		Shanghai , British Cons. Fl.-st.	31 14.7	121 28.1	
Lu-lua Shoal	6 20	113 18		Hankau, Mouth of Han River .	30 32.8	114 19.1	
Palawan, South extremity	8 20	117 12		Whangho River, Entrance	34 2.0	119 50.2	
Manila *	14 35.1	120°57'21"		Wang-kia-tu Bay, Lungwang)	35 39.0	119 47.2	
Bashees, San Domingo, Bantan .	30 27.5	121 28.5		Temple			
Pratas Isle, N.E. part	20 42.0	116 42.6		Staunton I., landing pl. N. side .	36 45.5	122 12.0	
Formosa , Ape Hill	22 38.0	120 15.7		Shao-tung Promontory, extr. .	37 24.5	122 38.2	
Port Kok-wi-kan, Oba. Point ..	23 6.0	120 4.8		Lungman Harbour, Te-chen ..	37 27.3	121 32.1	
Sano Bay (South Point)	24 36.0	121 52.2		Chifu or Yentai, Fort in Vill. R.	37 35.9	121 21.7	
Tamsui Harbour, Sand Point ..	25 10.1	121 5.3		Miantau Islands, N. Isle, Peak .	38 23.6	120 51.2	
Ruin Rock, Kelung Harbour ..	25 9.0	121 48.2		" South extreme	37 56.0	120 36.4	
Pescadores , Makung Harb., O.P. .	23 32.9	119 29.4		Talienwhan B., Oba. Spot	38 52.6	121 48.7	
Lu-sha Isle, Deep Bay, Head ..	26 35.6	127 58.9		Shalutien Isle, Jose Horn	38 53.0	118 28.2	
Siam Gulf , Pulo Kapas, SW Pt. .	5 13.0	103 16.0		Pei-ho, South Taku Fort	38 59.8	117 38.5	
" Gt. Kadang I., Bukit Mara .	5 44.3	103 1.6		Great Wall, at Sea-side	39 58.0	119 45.2	

XIV. NORTH PACIFIC.	Lat. N.	Long. E.
Quelpart Isle, Obs. Spot, W. side of Beaufort Isle.....	33 7	126 57.6
Montravel Isle, Centre.....	33 59.0	126 56.1
Ross Isle, Peak.....	34 6.0	125 6.2
Guérin Isle, Summit.....	36 7.0	126 0.3
Marjoribanks Harb., Mauzac I....	36 26.7	126 27.1
Caroline Bay, West Point.....	37 1.5	126 24.2
Port Adama, Entry Isle.....	39 16.0	121 31.1
Hulu Shan Bay, Obs. Place....	39 40.8	121 13.2
Liauhø, Yinkoa Pagoda.....	40 48.2	122 9.9
Liauti Shan Prom., S.W. Point.	38 43.0	121 4.2
Round Isle, Summit.....	38 40.0	122 9.1
Thornton Haven, Obs. Spot....	39 4.0	123 8.2
Kuper H., Josling I., N.E. Extr.	34 17.3	126 34.6
Port Hamilton, Obs. I., W. Pt.	34 1.4	127 17.9
Simonoseki, Mozi Saki, S. Point.	33 58.0	130 57.6
Wilson Isle, Summit.....	33 54.5	130 23.5
Firando Harbour, Entrance....	33 23.0	129 27.2
Goto Is., Obs. I., Hardy Harbour	32 49.0	128 55.8
Tamanoura, Entrance Harbour..	32 43.5	128 37.0
Cape Goto, Extreme.....	32 39.5	128 34.7
Nagasaki, Minage Point.....	32 44.5	129 50.7
Kusa-kaki, Ear's Peak.....	32 8.0	128 24.2
Udsi-sima, High Peak.....	30 39.0	129 28.2
Cape Chichakoff, Extreme.....	30 39.0	130 43.8
Oōsima Harb. of Kii, Pisayama Rock.....	33 29.8	135 47.7
Urakami Harbour, Village Point	33 33.6	135 54.2
Simidzu Harbour, Micosaki.....	35 0.8	138 30.3
Eno-ura Bay, Centre.....	35 3.0	138 51.8
Mount Fuziyama.....	35 21.1	138 42.3
Cape Idsu, S.E. Extreme.....	34 35.0	138 50.8
Rock Island, Centre.....	34 34.3	138 56.0
Simoda Harbour, Centre Isle...	34 39.8	138 56.3
Yedo Bay, Cape Sagami.....	35 8.0	139 40.8
Yokohama, West Pier.....	35 26.2	139 38.2
Hakodadi Harb., Entr. to Kamida Creek.....	41 47.1	140 43.8
Cape Matsumae, Islet off.....	41 24.9	140 6.1
Cape Nambu, Islet on W. side..	41 25.4	141 27.4
Red Cliff Point, extremity.....	41 28.1	141 7.8
Toriwaki, Low Isle off.....	41 33.6	140 55.4
Tatsupisaki, North side.....	41 16.3	140 21.4
Cape Greig, Rock off South side.	41 5.6	140 19.1
Fatsizio Isle, Centre.....	33 6.0	139 49.4
Vries Isle, North Head.....	34 47.3	139 21.0
Tabusima, East extremity.....	39 11.9	139 33.4
Awassima, N.E. extremity.....	38 29.6	139 15.3
Sado Isle, Yasaki.....	38 19.9	138 26.2
Yutsi-sima.....	37 50.5	136 54.2
Cape Louisa.....	34 40	131 35.2
Seto Uchi, Tomo, S. Pier.....	34 22.6	133 22.7
„ Osaki, Tree Isle, S. Pt.	34 7.7	135 7.8
Tsusima, Obs. Islet.....	34 18.9	129 12.5
Chosan Harbour, Obs. Spot.....	35 6.1	129 2.4
Port Lazarof, Obs. Point.....	39 19.2	127 32.0
St. Vladimir Bay, Low Point..	43 53.7	135 27.3
Kuril Islands, Kunashir, Peak..	44 31.0	145 46.0
„ Iturup, Cape Okebets...	45 38.5	149 14.0
„ Urup, Cape Kastrikum..	46 16.0	150 22.0
„ Simusir, Prevost Peak...	47 2.8	151 52.8
Risiri, Plc de Langle.....	45 11.0	141 12.3
Refunsiri, Cape Hieber.....	45 27.8	141 0.0
Cape Notoro.....	45 54.3	142 1.0
Cape Nossysh.....	45 25.8	141 33.5
Barracouta Harbour, Tullo Isle.	49 1.8	140 19.0
Castries Bay, Quoin Point.....	51 28.0	140 49.5
Jonquiere Bay.....	50 54.0	142 7.0
Saghalin Isle, Cape Aniva.....	46 2	143 30
Cape Tapaniva, or Patience.....	48 52	144 46.3
Cape Elizabeth, North extremity	54 24.5	142 46.5
Robben Isle, N.E. edge of Reef.	48 36.0	144 33.0
„ S.W. edge of Reef.	48 28.0	144 10.0
Great Shantar Isle, North Point	54 24.5	142 46.5

NORTH PACIFIC.	Lat. N.	Long. E.
Port Aian, Cape Vneschni.....	58 25.4	138 25.8
Avatcha Bay, East Entrance*..	52 52.5	158 47
Petropaulski, Church.....	53 0.9	158 43.5
Ohosima, N. extreme.....	28 31.7	129 40.2
Powhattan, Reef.....	30 41.0	130 19.0
Bonin Is., Port Lloyd, Peel Isle.	27 5.6	142 10.7
Sebastian Lobos, S.W. Isle.....	25 10.0	146 39.2
Lushu Is., Napha, Abbey Point	26 12.4	127 41.7
Meiacosima, Port Haddington..	24 25.0	124 5.9
Volcanos, Sulphur Isle.....	24 48.0	141 13.0
Marshall, or Los Jardines Islands	21 40.0	151 35.0
Ladrones, Asuncion Isle, Peak..	19 41.0	145 27.0
„ Seypan Isle, Peak.....	15 13.0	145 49.0
„ Guam Isle, Fort San Luis.	13 26.0	144 45.0
Borodino Islands, South Isle...	25 52.7	131 12.3
Luzon, Volcano of Ysarog.....	13 37	123 24
Samar, South and East extreme.	11 2	125 47
Port Mindanao.....	5 39	125 18
Sooloa, South extreme.....	5 1	119 55
Borneo, Banguey, Peak.....	7 29	117 9
Celebes, Manado, Fort.....	1 29.5	124 50
Gilolo, Morty, North Point....	2 44	128 25
Pellew Islands, North extremity	8 45	134 5
Marshall Islands, East Chain...	11 48	170 7
„ West Chain..	4 39	168 50
„ Chatham, N. Group	9 30	170 16
„ Mulgrave, S. Point.	6 7	171 57
Carolines, Prudence.....	9 31	161 8
„ Mortlock.....	5 29.3	153 58
	Lat. N.	Long. W.
Sandwich Is., Honolulu, Fort..	21 18.2	157 55.0
„ Hanalee Bay, Brit. Cons..	22 14	159 32.75
Christmas Isle, S.E. Point....	1 41	157 15
Galera Point, Columbia.....	0 50.2	80 4.7
Cape Corrientes.....	5 28.8	77 32.5
Buenaventura River, Basan Pt..	3 49.5	77 10.8
Cupica Bay, Cupica River.....	6 41.3	77 29.6
Isla del Rey, Cocos Point.....	8 12.5	78 53.7
Cape Mala, Extremity.....	7 27.1	79 59.0
Panama, N.E. Bastion.....	8 56.9	79 31.9
Gulf of Dulcé, Cape Matapol..	8 16	83 17
Cape Blanco.....	9 32	85 7
Calebra, Entrance.....	10 34.3	85 40.0
Salinas River, Salinas Isle.....	11 2.8	85 40.75
Realejo, Cardon Isle.....	12 27.9	87 9.5
Acapulco, Fort St. Diego.....	16 50.8	99 52.0
Manzanilla Bay, South side....	19 3.5	104 16
San Blas, Arsenal.....	21 52.5	105 15.5
Mazatlan, Custom House.....	23 11.8	106 23.7
Gnaymas, Morro.....	27 54	110 50
San Jose Mission.....	23 3.5	109 41
Cape St. Lucas.....	22 52	109 53
Magdalena Bay, Entrada Point..	24 32.3	112 3.0
Port St. Bartholomew.....	27 39.8	114 53.5
St. Quintin, West Point.....	30 21.5	115 58.5
St. Diego, Point Loma.....	32 38.8	117 14.75
Point Concepcion*.....	34 31	120 30
Monterey, Fort.....	36 36.4	121 53.0
Point Pinos*.....	36 38.5	121 55
St. Francisco, Yerba Buena Cove	37 38.5	122 24.0
„ Fort, South side, Entrance	37 48.5	122 28.5
Cape Mendocino.....	40 29	124 32
Cape Flattery, Tatouch Isle*..	48 23.2	124 45.2
New Dungeness,* N. end of Spit	48 11.0	123 6.1
Blunt Isle,* highest part.....	48 19	122 51.5
Admiralty Inlet,* Whedbey Isle.	48 9.3	122 39.5
Vancouver I., Gt. Race Rock*..	48 17.7	123 32.2
Esquimalt Head, Duntze Head..	48 25.8	123 26.7
Victoria, Laurel Point.....	48 27.4	123 23.0
New Westminster, Barracks...	49 13.0	122 54.4
Nootka Sound, Friendly Cove..	49 35.5	126 37.5
Queen Charlotte Islands, S. Pt..	55 55	131 2
Port Stewart, S'most Isle.....	55 38.3	131 47
Port Protection, Port Baker...	56 20.5	133 36

XV. SOUTH PACIFIC.		Lat. S.	Long. E.	SOUTH PACIFIC.		Lat. S.	Long. E.
Australia, Sydney, Ft. M ^c Quarrie		33 51.7	151 14.0	Rockingham Bay, Gould Isle ...		33 9.9	146 11.5
Paramatta Observatory, S.M.,		33 48.7	151 1.0	Halifax Bay, Bay Rock		19 7.2	146 44.7
Sow and Pigs, * N.W. edge ...		33 50	151 17	Cape Upstart, N.W. Point		19 42.8	147 47
Port Jackson *		33 51.2	151 18.25	Cumberland Isles, S.E. Isle (K. 1)		21 7	149 58
Botany Bay, N. Pt. of Entrance.		34 0	151 16	Port Bowen, Entrance Isle		22 29.0	150 48.5
Jervis Bay, N. Pt. of Entrance.		35 6	150 53	Port Curtis, Facing Isle		23 50	151 24
Twofold Bay, Red Point*		37 6.2	149 58.3	Cape Morroton, N. Point of Island		27 8	153 26
Cape Howe, Islet off		37 31	150 0	Shoal Bay, Entrance		29 26	153 24
Corner Inlet, S. Pt. of Entrance.		38 47	148 30	Port Macquarrie, Entrance		31 25	152 57
Cape Wilson		39 8	146 23	Port Stephens, Barroisnee Head		32 40.7	152 4.25
Kent Isles, S.E. Isle *		39 30	147 19	Port Hunter, Court House		32 55.8	151 48.75
Glennie Isles, South Point		39 12	146 15	Tasmania, Hobarton, Mulgrave		42 53.5	147 21.5
Cape Liptrap, Point		38 55	145 57	Port Arthur, Semaphore		43 9.1	147 50.7
Williamstown, Jetty		37 51.2	144 54.75	Cape Pillar, Tasman's Isle		43 19	146 0
Grant Isle, West Point		38 31.6	145 11	Schouten Isle, South Islet		42 21	146 18
Cape Schank		38 30	144 57	St. Patrick's Head		41 34	148 18
Western Port, Phillip I., N.E. Pt.		38 26.7	145 18.25	Swan Island, East Point *		40 44	148 9
Point Gellibrand *		37 52.7	144 55.75	Furneaux Islands, Clarke I., S. Pt.		40 55	148 10
Melbourne, Bateman's Hill		37 48.6	144 57.75	Port Dalrymple, Low Head *		41 3.4	146 48.25
Shortland Bluff *		38 16.5	144 43.2	" George Town, Flag-staff		41 6.3	146 50.25
Port Phillip, Port Nepean		38 18.5	144 42.75	Table Cape		40 56	145 42
Cape Otway *		38 51	143 33	Circular Head		40 43	145 17
King Isle, Harbinger Rocks		39 34	143 52	Thurs Hummock Isle, S.W. side		40 26.5	144 51.0
" S. Point, Cape Stokes		40 10	143 50	Albatross Isle		40 22	144 39
Cape Nelson, South Point		38 26	141 32	Cape Grim		40 40	144 42
Cape Bridgewater		38 22	141 32	West Point		40 57	144 35
Cape Northumberland, Pointed		38 3	140 37	Macquarrie Harbour, Entr. Isle		42 11.8	145 14
Rocks				Point Hibbs		42 39	145 17
Murray River, Mouth		35 31	138 58	Rocky Point		43 1	145 30
Kangaroo Isle, North Point		35 36	137 44	Port Davey, Pyramid Rock, Entr.		43 21	145 56
" Mount Torrens		35 50	136 38	Maatsuyker Is., S.W. Needle Rk.		43 41	146 11
" Cape Bedout, W. extrem.		35 57	136 37	Bruni Isle, Tasman's Head		43 32	147 21
Cape Willoughby *		35 51	138 12	S.W. Pt., C. Bruni		43 28.7	147 6
Cape Jarvis		35 38	138 9	N. Zealand, Auckland, Depot Pt.		36°50'5"	174°49'10"
Glenelg, Flag-staff		34 58.8	138 32.75	Kawan I. Bon Accord, Monona Jy.		36 26.0	174 50.25
Mount Lofty, 2,200 feet		34 58.5	138 43.75	Great Barrier Isle, Needles Point		36 1.25	175 28.5
Adelaide, Town		34 55	138 36	Wangari Harbour, Lort Point ..		35 51.15	174 32.17
Port Adelaide *		34 48	138 28	Tutukaka Harbour, North Head		35 37.9	174 34.3
Cape Spencer, S'most Point		35 18	138 55	Wangaruru Harbour, Grove Pt..		35 23.8	174 22.3
Corney Point		34 52	137 3	Bay of Islands, Motu Men Isle ..		35 17.0	174 7.03
Port Lincoln		34 43	135 53	Wangarua Harbour, Peach Isle..		35 1.7	173 46.7
K. George's S., New Gov. Build.		35 2.2	117 53.75	Manganni, White's Point		35 0.3	173 33.6
Point d'Entrecasteaux		34 52	116 1	Cape Karakara, extremity		34 47.3	173 25.3
Cape Leeuwin, Rocks 2 leagues out		34 21	115 6	Parenga-runga Harbour, Coal Pt.		34 31.0	173 1.8
Swan E., Fremantle, Scott's Jet.		32 3.3	115 45.5	North Cape (Cape Otou), Islet..		34 25.1	173 4.5
Perth, Government House		31 57.4	115 52.75	Cape Maria Von Diemen, Islet..		34 28.3	172 38.7
Garden Isle, N.W. Point		32 8.9	115 40.5	Herekina, South Point		35 18.2	173 11.1
Rottemest Isle *		32 0.3	115 31.25	Hokianga River, Flag-staff		35 32.1	173 22.9
Champion Bay, Moore Point		28 47.1	114 36.25	Kaipara Harbour, N. Entr. Head		36 24.3	174 7.0
Wizard Peak, 840 feet		28 29.7	114 47.0	Manukau Harbour, Flag-staff ..		37 3.0	174 32.2
Mount Fairfax, 582 feet		28 45.4	114 41.7	Waikato River, Maratai Village.		37 24.3	174 47.3
Dirk Hartog's Isle, North Point.		25 31	112 54	Whangaroa Harb., S. Entr. Point		37 46.4	174 53.2
Shark's Bay, Cape Lesueur		25 44	113 28	Ka Whia Harbour, South Head ..		38 4.8	174 49.0
N.W. Cape, North Point		21 48	114 3	Albatross Point, North extremity		38 6.2	174 43.5
Ermouth Gulf, Bay of Rest		22 17	114 0	New Plymouth, Flag-staff		39 3.6	174 4.9
Depuch Isle		30 38.4	117 41.0	Mount Egmont, 8,270 feet		39 18.0	174 4.9
Cape Leveque, Islet off		16 23	113 1	Manawatu River, N. Entr. Point		40 27.2	175 14.7
King's Sound, Point Torment ..		17 5.5	123 41.75	Farewell Spit, Bush End, extr. .		40 33.3	173 2.0
" Fitzroy R. Mo., Escape Pt.		17 24.4	123 39.75	Cape Farewell, extremity		40 20.8	172 42.2
" Pt. Cunningham, N.W. part		16 41.5	123 14.25	Cape Foulwind, 3 steeples, N. one		41 43.3	171 35.3
Cape Londonderry (rocks 3 m. off)		13 44	126 57	Bold Head, extremity		42 57.0	170 42.3
Victoria R., Pt. Pearce, S.W. extr.		14 25.1	129 20.7	Mount Cook, 13,200 feet		43 36.5	170 12.2
Paterson's Bay, Quail Isle		12 30.9	130 28.5	George Id., Anchor. Cove, N. side		44 55.3	167 36.8
Port Essington, Govt. House ..		11 22.3	132 10.75	Thompson Sound, Deas Cove, Head		45 11.7	166 58.2
Wessel Isles, N. Pt., Cape Wemel		10 59	138 45	Breaksea Isle, N. E. Point		45 34.7	166 38.7
Groote Eylandt, S.E. Point		14 16	136 58	Milford Sound, Freshwater Basin		44 35.0	167 47.2
Wellesley Isles, North extremity		16 18	139 40	Five-fingers' Pt. W. of Dusky Bay		45 44.3	166 27.7
Cape York, Rocky Islet		10 41.6	142 34	West Cape, extremity		45 54.3	166 26.5
Booby Isle, Post-office		10 36.7	141 54.0	Chalky Islet, N. Port, Little I..		45 58.0	166 34.7
Raine Isle, Beacon		11 36	144 4.25	Stewart Isle, Black Rock Point ..		46 41.5	167 53.7
Sir Charles Hardy's Isles, N. Isle		11 54.7	143 30.75	" S.W. Cape		47 17.0	167 30.3
C. Weymouth, Restoration Isle,		12 37.5	143 27.5	Pt. Pegasus, Cove abt. Anchor. I.		47 11.7	167 41.8
West Point				Paterson's Islet, Glory Cove ...		46 58.5	168 10.8
Lizard Isle, Summit, 1,200 feet		14 41.4	145 28.5	Snarres, S.W. Isle		48 6.7	166 28.3

XVI. SOUTH PACIFIC—cont.	Lat. S.	Long. E.
Pt. Adventure, White Beach, S. end	47° 8' 9"	168° 11' 9"
Nuggett Pt., extremity of Rocks	46° 27' 3"	169° 51' 5"
Taeri Isle, East Point	46° 3' 7"	170° 14' 3"
Otago, Tairon Head	45° 48' 9"	170° 44' 9"
Koputai Bay, South Point	45° 49' 3"	170° 39' 2"
Waitangi River, Entr. N. Head	44° 55' 0"	171° 12' 1"
Timaru, Flag-staff, Landing-pl.	44° 23' 0"	171° 17' 3"
Akaroa Harbour, Obs. Head	43° 49' 6"	172° 58' 3"
Lyttleton, Custom House	43° 36' 7"	172° 44' 28"
Kaikoura Peninsula, East Point	42° 26' 5"	173° 48' 8"
Cape Campbell, extremity	41° 43' 3"	174° 18' 5"
Cape Jackson	40° 59' 8"	174° 20' 0"
Pelorus Sound, Ohingaroa Bay	41° 14' 4"	173° 51' 6"
D'Urville Isle, Port Hardy	40° 46' 6"	173° 55' 0"
Current Basin, Cross Point	40° 56' 3"	173° 52' 3"
Nelson, Magazine on Boulder Bk.	41° 15' 6"	173° 17' 0"
Astrolabe Road, Adele I., N.E. Pt.	40° 58' 9"	173° 5' 25"
Masniere Bay, Tasman Corner	40° 31' 8"	172° 45' 2"
Porirua Harb., Mana I., N.W. Pt.	41° 5'	174° 48'
Wellington, Head, 2,190 feet	41° 11' 3"	174° 23' 0"
Cape Palliser (Kawa Kawa)	41° 37' 8"	175° 17' 0"
Flat Point	41° 10' 8"	176° 1' 5"
Cape Turnagain (Teporo), E. extr.	40° 32' 0"	176° 45' 3"
Cape Kidnappers (Matauanau)	39° 38' 0"	177° 7' 7"
Ahauriri Harbour, Moori Pah	39° 28' 7"	176° 55' 2"
Portland Isle (Tehoura), S. extr.	39° 17' 7"	177° 53' 1"
Poverty (Turanga) Bay, S. Point	38° 45' 0"	177° 59' 4"
Toing Bay, Motu-Heka Isle	38° 20' 8"	178° 21' 2"
East Cape (Wai-Apu) Islet	37° 40' 0"	178° 36' 1"
Cape Runaway (Tewaka)	37° 30' 7"	178° 0' 5"
Tauranga, Mount Mongonui	37° 36' 4"	178° 11' 2"
Cape Colville, North Point	36° 28' 8"	175° 22' 0"
Auckland Isles, South Cape	50° 51'	168° 7'
West extreme	50° 50'	165° 55'
Campbell Isle, E. side, S. Harb.	52° 34' 4"	169° 12' 75"
Macquarie Isle, North Point	54° 19'	158° 56'
Bounty Isle	47° 44'	170° 7'
Antipodes Isle	47° 32'	179° 49'
Chatham Isle, Port Waitangi	43° 57'	178° 44'
Kermadec Isle, Sunday Isle	29° 15'	177° 56'
Norfolk Island, Sydney B., Fl.-st.	29° 3' 7"	167° 57' 25"
Lord Howe Island	31° 37'	159° 14'
Middleton Reef	29° 28'	159° 4'
Feejees, Vanua Levou, E. Point	16° 8'	179° 55'
Ovianau, Levuka, Mission School	17° 40' 7"	178° 49' 0"
Viti Levou, Rewa Rds., Nukulaui I.	18° 10'	178° 31' 0"
New Caledonia, East Point	22° 16'	168° 55'
West extremity, Point Tonnerre	20° 24'	164° 0'
Bulade Harbour, Isle	20° 17' 2"	164° 25' 0"
Britannia Isle (Maré), E. Point	21° 28'	168° 10'
Chabrol Isle (Lifu), East Point	21° 5'	167° 28'
New Hebrides, Tanna Isle, Port	19° 30' 9"	169° 28' 7"
Resolution, Cook's Pyramid	18° 46'	169° 15'
Erromango Isle, Trator's Head	17° 52'	168° 35'
Sandwich Isle (Vati), S.E. Point	16° 25'	167° 48'
Mullcollo, Port Sandwich	15° 44'	167° 20'
St. Bartholomew, Islet, S.E. Pt.	15° 40'	166° 44'
Espiritu Santo, S.W. Pt., Cape	14° 43'	166° 40'
Liburne	13° 53'	168° 45'
N. Point, C. Cumberland	11° 37'	168° 49'
Banks Isle East, or Sugarloaf	10° 41'	168° 10'
La Perouse (Varikoro), Summit	10° 38'	160° 41'
Sta. Cruz Isle (Nitendi), E. Point	10° 31'	160° 41'
Salomons Isle, Rennel I., S.E. Pt.	11° 58'	162° 24'
San Christoval (Aroani), E. Point	8° 22'	160° 37'
Malaita, N.W. Point	8° 50'	160° 54'
Guadalcanar, East Point	8° 34'	159° 54'
Yebel, South Point, Cape Prieto	7° 29'	157° 55'
Choiseul, E. Point, Cape Labbe	6° 42'	156° 32'
N.W. Point, C. Alexander	5° 30'	155° 7'
Bougainville, North Point	4° 42'	152° 44' 5"
New Ireland, Port Carteret	4° 49' 8"	152° 54' 7"
Cocos Isle, N.E. Point		
Port Prastin, S.E. Corner		

SOUTH PACIFIC.	Lat. S.	Long. E.
North Britain, South Cape, Islet	8° 30'	149° 48'
Rossel Isle, N.E. Point	11° 22'	154° 26'
Admiralty Isle, N. most Islet	1° 54'	146° 49'
New Guinea, Riche Isle, N. Pt.	8° 2'	147° 55'
C. K. William, high land to W. ward	6° 11'	147° 43'
Dampier Isle	4° 40'	145° 56'
D'Urville I., Peak near W. end	3° 19' 8"	143° 29' 3"
Cape Ambarnoh (Pt. D'Urville)	1° 26'	137° 45'
Mysory Isle, East Point	1° 4'	136° 11'
Jobie Isle, East Point	1° 48'	136° 48'
Port Dorei, East Pt., near Head	0° 51' 5"	133° 58' 1"
Mispalu Isles, S.E. Point	0° 19'	132° 7' 1"
Waigeo, S.E. Point	0° 21'	131° 16' 1"
Boni Isle, North Point	0° 1' 4"	131° 3'
Pigeon Isle	0° 39' 4"	130° 32' 25"
Amsterdam and Middleburgh	0° 19' 9"	132° 7' 1"
S.E. extremity		
McCluer's Inlet, East Head	2° 26'	133° 58'
Triton Bay, Fort Dubus	3° 47'	134° 2'
C. Valsche, W. Pt. of Fred. Hen. I.	8° 22'	137° 38'
Cape Possession	8° 32' 2"	146° 25'
Cape Rodney, Point	10° 10'	148° 28'
Great Kei Isle, North Point	5° 15'	133° 6'
Aroe Isle, Dobbo Harbour, Point	5° 45' 4"	134° 17'
Timor Laut, W. Limit, Woody I.	8° 21'	130° 40'
Ceram, Wahsay Harbour Fort	2° 45' 2"	129° 28'
Boeroe, Cajeli Bay, Fort Defence	3° 22' 3"	127° 14' 25"
Amboyna, City, Fort Victoria	3° 41' 5"	128° 8' 1"
Kulle Taliabo, Haycock Isle	1° 47'	124° 22'
Obi Major, S.E. Point	1° 27'	127° 54'
Mysol, West Point	1° 57'	129° 39'
Batjan, Fort Barnveldt	0° 37'	127° 34'
Celebes, Peleing Isle, S.E. Point	1° 50'	123° 13'
Roetan Isle, Bolio Town, Fort	5° 28'	122° 33'
Macassar, Fort, N. Bastion	5° 7' 9"	119° 21' 1"
Timor, Koepang, Fort Concordia	10° 8' 6"	123° 33' 8"
Dilly, Town, Flag-staff	8° 33'	125° 32' 1"
Flores, Head, Iron Cape	8° 1'	122° 48'
Water, Dog Isle, N.W. Point	7° 41'	125° 54'
Lomblem, East Point	8° 14'	123° 33'
Pantar, N.E. Point	8° 10'	124° 18'
Ombay, Islet off S.W. Point	8° 30'	124° 15'
Sumba, or Sandalwood, W. Pt.	9° 42'	118° 58'
Sumbawa, S.W. Point	9° 2'	116° 43'
Lombok, Pt. N.E. part, 11,400 ft.	8° 26'	116° 23'
Bali, Peak on E. part, 11,319 ft.	8° 21'	115° 25'
Madura, N.W. or Klampis Point	6° 54'	112° 43'
Sourabaya, Kalemasas Fort, Fl.-st.	7° 14' 5"	112° 42' 7"
Samarang, Flag-staff	6° 57' 3"	110° 25'
Batavia, Observatory, S.M.	6° 7' 7"	106° 48' 6"
Bantam, Flag-staff	6° 1' 7"	106° 8' 7"
Anjer (Light * S.W. ward), Fl.-st.	6° 3' 2"	105° 55'
Java Head	6° 47'	105° 11'
Krakatoa Peak	6° 9'	105° 27'
Bencoolen, Fort Marlborough	3° 47' 3"	102° 17'
N. Pageh I., vis. 15 leagues N. Pt.	2° 32'	100° 4'
Banca, South extrem. (Rock off)	3° 8'	106° 29'
Billiton, South Point	3° 15'	107° 29'
Borneo, South extr. C. Salatan	4° 10'	114° 40'
Kumpal, S.W. Point	2° 44' 2"	110° 7'
Keeling Isle	11° 50'	96° 51'
Lat. S. Long. W.		
Friendly Is., Lafouka, Miss. Stat.	19° 48' 2"	174° 20'
Tongatabou, N. side, Nukalofa	21° 8' 0"	175° 14' 7"
Vavau, West Point	18° 39' 0"	174° 1' 0"
Navigators, Upolu, Apiahad	13° 48' 9"	171° 41' 2"
Cook's Is., Rarotonga, N.W. Pt.	21° 11' 8"	159° 47'
Bass Islands, or Four Crowns	27° 40'	143° 30'
Society Is., Tahiti, Pt. Venus	17° 29' 2"	149° 29' 0"
Flag-staff		
Papeete Harbour, Flag-staff	17° 32' 1"	149° 34' 0"
Bora Isle, Otaavamae, House	16° 31' 6"	151° 46' 0"
Marquesas, Nukahiva, St. Anne B.	8° 55' 3"	140° 6' 0"
Gambier's, Manga, Mount Duff	23° 8' 0"	134° 55' 0"

XVII. N. AMERICA.	Lat. N.	Long. W.
Newfoundland, St. John's, S. }	° ' ° '	° ' ° '
Head, Fort Townshend	47 33·6	52 43·0
Cape Spear *	47 30	52 39
Cape Race	46 40	53 7
Cape Pine *	46 37	53 36
Cape St. Mary	46 50	54 15
St. Pierre Isle, S.E. Point *	46 45	56 12
S.W. extremity Cape Ray	47 37	59 18
St. Paul Isle, North Point *	47 14·0	60 9·0
Magdalen Isles, Bird Isles, E. one	47 51·0	61 9·75
„ Bryon or Cross I., E. Pt.	47 48·0	61 25·25
„ East Isle, E. extremity ..	47 37·7	61 24·5
Mingan Isle, Clearwater Point, }	50 12·6	63 27·7
S.W. extremity		
River St. John (Labrador), Entr. }	50 17·2	64 21·0
East Point		
Seven Isles Bay, Store	50 13·1	66 24·75
Point Monts, South Light *	49 19·7	67 22
Quebec, N.E. Bastion	46 49·1	71 13·75
Wolfe and Montcalm's Monument	46 48·6	71 13·5
Green Isle *	48 3·4	69 26·0
Cape Chatte. extremity	49 6·0	66 46·0
Cape Magdalen (River E-d)	49 15·6	65 22·0
Cape Gaspé, Flower-pot, Rock off	48 45·2	64 10
Anticosti Isle, E. or Heath Point *	49 5·4	61 45·2
S.W. Point *	49 23·8	63 36·0
Ellis Bay, W. Entrance	49 47·8	64 23·5
Bonaventura Isle	48 29	64 10
Chaleur Bay, Carlisle	48 1	65 16
„ Dalhousie Isle	48 4·4	66 22·25
Miscou Isle, N.E. Point, Pt. Birch	48 1	64 31
Port Escumenac *	47 5	64 46
Prince Edward Isle, N. Cape ..	47 4	64 1
Richmond Bay, Royalty Point ...	46 34·0	63 43·0
„ East Point	46 27	61 58
Charlotte, Fort George, Flag-staff	46 14·0	63 7·0
Cape Breton, Cape North	47 3	60 25
Sydney Harbour, East side, * Entr.	46 16	60 8
Scatary Isle, N.E. Point *	46 2	59 41
Pictou Harbour *	45 41·5	62 40·25
Gut of Canso, N.W. Entr. *	45 41·8	61 29·5
Cranberry Isle * (Bass Rk., 2 m. E.)	45 20·0	60 56·0
Halifax, Dockyard, Tablet, S.M. ..	44 39·7	63 35' 30"
Sambro Isle *	43 26·3	63 33
Malaguash Harbour, Cross Isle * ..	44 20	64 7
Coffin Isle *	44 3	64 36
Shelburne, M'Nutt's I., S.E. Pt. * ..	43 37·5	65 16
C. Sable, S.E. Pt. of Islet (advanc.)	43 24	65 36
Cape Fourchu *	43 47	66 10
Bryer's Isle *	44 16	66 22
Annapolis, Pt. Prim, S. side Entr. *	44 41	65 45
Black Rock, Point *	45 10·8	64 48
Cape Enrage *	45 36	64 29
Quaco *	45 23	65 20
St. John's, Partridge Isle	45 14·1	66 3·5
Cape Lepreau *	45 3·7	66 27
St. Andrew's, South Point *	45 4·3	67 3
Passamaquoddy B., Campo, * N.Pt.	44 57	66 55
Quoddy Head *	44 48	66 57
Grand Manan, N.E. Point	44 46	66 43
Gannet Rock *	44 30	66 46
Machias Seal Isle *	44 29	67 5
Petit Manan, South Point *	44 22	67 52
Baker's Isle *	44 13·5	68 8
Castine *	44 17	68 45
Owl's Head Bay, * N.E. Point ...	44 4	68 45
Mount Desert Rock, * Bell	43 58	68 8
I. Haute (Saddleback to Eastward)	43 59	68 36
Matinicus Isle, South Rock *	43 46·5	68 49
White Head *	43 57	68 4
Manhegan Isle *	43 44	69 18
Penmaquid Point *	43 48	69 29
Townshend Harbour *	43 48	69 36
Seguin Isle, * Bell	43 41·6	69 44

N. AMERICA.	Lat. N.	Long. W.
Portland, City Hall	43 39·2	70 15·2
„ West Entrance	43 39	70 17
Cape Elizabeth *	43 33·6	70 11·5
Saco Harbour, Wood Isle *	43 27	70 19
C. Porpoise, Goat I. * S.W. Point	43 21	70 25
Bald Head	43 13	70 34·5
Boon Isle *	43 8	70 29
Whale's Back *	43 3	70 41
Portsmouth, Fort Constitution ..	43 3·5	70 43
Isle of Shoals, South Isle *	42 58	70 37
Newbury Port *	42 48·5	70 49·0
Ipswich Bay *	42 41	70 47
Annis Squam. Harbour *	42 39·8	70 41
Cape Ann, on Thatcher Isle * ..	42 37	70 40
Cape Ann Harb., Ten-pound I. * ..	42 37	70 40
Salem, City Hall	42 31·5	70 54·0
Baker's Isle *	42 32·2	70 47·5
Marble Head *	49 30·0	70 51
Boston, State House	42 21·4	71 4·25
„ Harb., N. side, Main Outer Entr.	42 19·7	70 53·75
Scituate *	42 12·3	70 43·25
Plymouth, Gurnet *	42 0·2	70 36·25
Barnstable *	41 43·2	70 16·6
Billingsgate Isle *	41 51·6	70 4·5
Race Point *	42 3·7	70 15·0
Cape Cod, Higher Truro *	42 2·4	70 4·0
Long Point, Cape Cod Harbour * ..	42 2·1	70 10·5
Nauset *	41 51·6	69 57·25
Chatham Harbour *	41 40·3	69 57·25
Monomy Point *	41 33·6	70 0·0
Point Gammon *	41 36·6	70 16·25
Nantucket Isle, Sandy Point * ..	41 23	70 3
„ Brant Point, Town * ..	41 17·5	70 5·25
Martha's Vineyard, N.E. Point * ..	41 25·2	70 27·5
„ Holmes Harbour, West Chop * ..	41 28·8	70 36·25
„ West Point, Gay Head * ..	41 20·9	70 50·5
„ Cuttchank, * S.W. Point	41 25	70 57
Seaconnet Point	41 26·5	71 13·5
Bristol Episcopal Chapel	41 40	71 17·2
Providence, College	41 49·6	71 24·7
Newport, Court House	41 29·5	71 19·2
Beaver-tail Point, or Rhode Isle * ..	41 26	71 24·5
Port Judith *	41 23	71 30
Stonington, Town, South Point * ..	41 19	71 54·5
New London, * West Entrance ...	41 18·9	72 5·7
Goose Island *	41 13	72 42
New Haven, Five-mile Point * ..	41 14·5	72 54·5
Norwalk Isle *	41 2·8	73 25·5
Block Isle, North Point *	41 13·4	71 35
Long Isle, East or Montauk Point * ..	41 4·2	71 52·0
New York, City Hall	40 42·7	74 0·75
Fort Tomkins *	40 36	74 3·5
Prince's Bay	40 30·4	74 13·25
Sandy Hook *	40 27·6	74 0·7
Nevisink *	40 23·7	73 59·5
Barnegat Inlet *	39 45·9	74 7·0
Little Egg Harb., Tacker's I., N.Pt.	39 30·8	74 17·5
Cape May *	38 55·8	74 58·5
Brandy-wine Shoal *	38 59	75 8
Egg Island *	39 10·4	75 9
Cohanzey Creek *	39 25	75 17
Philadelphia, State House	39 57	75 9·5
Reed Isle, * Bell	39 30	75 35
Bombay Hook *	39 21·7	75 31
Salem, City, Church	39 34·5	75 36·0
Mahon's Ditch *	39 10	75 25
Cape Henlopen *	38 46·6	75 6·0
„ Beacon, * Small	38 47·4	75 5·5
„ Beacon, * W. end Breakwater	38 47·5	75 6·7
Assentague Isle, South end * ..	37 59	75 25
Smith's Isle, East Point *	37 13	75 52
Sand Spit *	37 45	76 4
Cape Charles	37 3	76 2
Baltimore, Battle Monument ...	39 17·4	76 37·5

XVIII. N. AMERICA—cont.		Lat. N.	Long. W.	N. AMERICA.		Lat. N.	Long. W.
Washington, Capitol	30	53.4	77 2.0	Alacranes, Port, Perez Isle, Huts.	22	23.6	89 42
Point Look-out *	38	1	76 27	Mageras Isle, Stone Turret	21	12.7	86 40.5
New Point Comfort *	37	18	76 21	Ambergris Isle, East Point	18	6	87 50
Back-river Point *	37	5	76 21	Light-house Reef,* S.E. Pt. Half- moon Cay	17	12	87 33
Cape Henry *	36	56	76 4	Turneffe Rfa.,*** N. Pt. Maugor Cay	17	36	87 46
Pimlico Sound, New Inlet	35	37	75 27	Belise, Fort St. George	17	29.3	88 12
Cape Hatteras *	35	15	75 30	Truxillo, Fort	15	55.7	85 59.5
Ocracock Inlet, North side *	35	6.5	75 58	Utile Isle, N.E. Peak	16	7.5	86 52.7
Cape Look-out *	34	36	76 36	Port Royal, George Cay, N.W. Pt.	16	24.3	86 19.2
New Inlet, Federal Point *	33	56	77 55	Carataxa Lagoon, East Point	15	23.7	83 43
Cape Fear	33	48	77 57	St. Andrew's Isle, S.W. Cove ...	12	31.7	81 44
Bald-head Isle *	33	51	78 0	Blewfields	11	59.3	83 41.5
North Isle, South Point *	33	13	79 10	Great Corn Isle, S.W. Point	12	9.2	82 59.7
George Town	33	22	79 18	San Juan de Macaragua	10	55	83 43
Cape Roman *	31	1	79 24	Jamaica, E. Point or Pt. Morant	17	55.7	76 11
Charleston, Fort Pinckney	32	46.4	79 55	Port Antonio, Fort	18	11.3	76 27
Charleston Light *	32	42.2	79 52.7	St. Ann's Bay, Long Wharf	18	26.4	77 13
Beaufort Arsenal	32	26	80 41	Falmouth Harbour, Fort	18	30.6	77 40
Port Royal, Entrance *	32	7	80 34	Montego Bay, Fort	18	29.4	77 56
Savannah, South Entrance *	32	0	80 52	North Negril, North Point	18	23	78 22
„ Town, Exchange	32	4.9	81 7	Old Harbour, Careening Isle	17	53.5	77 6
Doboy Sound *	31	27	81 24	Port Royal, Fort Charles	17	56	76 51
Danen, Town	31	25.4	81 33	Pedro Bank, N.W. edge	17	36	78 52
St. Simon's Isle, on South Point *	31	8	81 36	Great Cayman Isle, Fort George .	19	17.7	81 23.5
Cumberland Isle, North Point * ..	30	56	81 34	St. Domingo, City, Consulate ..	18	28.2	69.52
Amelia Isle, North Point *	30	42	81 36	Port au Prince, Fort Isle	18	33.7	72 21
St. John's River, South Entrance *	30	20	81 33	Gonaive Isle, West Point	18	55.4	73 18.25
St. Augustine Harbour, Fort *	29	54	81 26	Gonaives, Port Verreur	19	25.7	72 42.5
Anastasia Isle, North Point *	29	52	81 25	St. Nicholas' Mole, Ft. St. George	19	49.5	73 22.2
Cape Canaveral *	28	28	80 33	C. Haytien Harb., Turret d'Estaing	19	46.7	72 11.75
C. Florida,* S. Pt. of Biscayno B.	25	41	80 10	Samana, Town, Fort	19	12.5	69 19.25
Carysfort Reef *	25	13	80 11	Banistre Caya, N.E. one	19	10.4	69 15.75
Sand Cay *	24	27	81 52	Cuba, Santiago,* Morro	19	53.9	75 55.5
Cay West, West Point *	24	32	84 48.5	Cape de Cruz	19	50.4	77 45
„ Floating Light *	24	38	81 53	Jagua Bay *	22	1	80 30
Tortugas, West Point, Bush Cay.	24	37.4	82 52.5	Isle de Pinos, S.W. Point	21	24	83 7
Cape Sable, Fort	25	6	81 9	West extremity Cape St. Antonio.	21	51.5	84 57.2
Cape Romano	25	51	81 56	Havannah,* Morro, S.M.	23	9.4	82.21.57
Tampa Bay, Egmont Cay,* at Entrance North Point	27	36.1	82 45.25	Piedras Cay (Light destroyed) ...	23	14.7	81 8.0
Dog Island *	29	46.3	84 38.2	Port Icacos * (Light to S. Eastward)	23	11	81 9
St. George Isle *	29	37.4	85 5.25	Pan de Matanzas, 1,277 feet	23	1.9	81 45
Pensacola Bay, Entrance *	30	20.8	87 17	Cay Sal, North Point	23	41.7	80 25.0
„ Naval Yard, Store	30	20.5	87 15.25	Cay Sal, Elbow Cay *	23	56.5	80 26.5
Mobile, East Entrance *	30	13.6	88 0.75	Port Maternillas *	21	40	77 8
„ Sand Isle *	30	11	88 2	Barracoa, Fort	20	21.6	74 29
„ Chocktaw Pt.,* S. of City	30	40	88 2	East Point, Cape Maysi	20	15	74 7
Ship Isle, West Point *	30	12.6	88 57.2	Cayo Romano, N.W. Point	22	27	78 19
Cat Isle, West Point *	30	13.7	89 5	Bahamas, Turk's Isle, N. extr. .	21	23	71 6
Pass Christian,* on Main	30	18	89 10	„ Hawk's Nest	21	26.3	71 10.5
Chandeleur Isle,* North Point ...	30	3	88 50	Great Inagua, N.E. Point	21	21	73 1
Mississippi R., N.E. Pass, Frank's I.	29	8.5	89 1.5	Cuicos Bank, East Harbour	21	31	71 32
„ South Passage	29	0	89 8	Hogsty Reef, N.W. Cay	21	40.5	73 50.7
„ S.W. Passage	28	58.5	89 20	Mariguana Isle, Centre Hill	22	23	72 55
New Orleans, City Hall	29	57.7	90 6.75	Samana, or Attwood's Cay, W. Pt.	23	5.5	73 49
Timbalier Isle *	29	4	90 17	Crooked Isle, Moss Flag-staff	22	7.5	74 20.5
Point au Fer *	29	19.5	91 20	Rum Cay, South Point	23	37	74 50
Belle Isle (Vermilion B.),* W. end	29	32	92 0	Watlings Isle, South end	23	56.7	74 28
Bolivar Point *	29	22	94 49	Concepcion, West Point	23	50	75 8
Aransas Pass *	27	50	97 2	St. Salvador, East Point	24	8	75 17
Rio Grande del Norte	25	56	97 12	Stirrup Cays, Ellis Flag-staff ...	25	49.7	77 55
Tampico, North Point	22	15.5	97 46	Andros Isle, Mastic Point	25	4	77 57
Vera Cruz, San Juan de Ulloa * ..	19	11.9	96 8.0	New Providence, Nassau *	25	5.6	77 21.25
Sacrificios Isle *	19	10.2	96 5.5	Eleuthera I., N.E. or Palmetto Pt.	25	9	76 9
Isle Carmen, West end, Port La- guna, Entrance of Terminos Lagoon, Brit. Cons.	18	38.4	91 50.7	Long Isle, South Point	22	51	74 51
Lerma, Church in Square	19	48.4	90 36.75	Lobos Cay, Beacon	22	22.8	77 35.5
Campeachy	19	50	90 33	Gun Cay *	25	34.5	79 19
Sisal, Fort	21	10.1	90 2.75	Great Bahama Bank, Gt. Isaac Ikk.	26	2	79 5
Silam, Town	21	23.7	88 54.5	Great Abacou Isle,* near S. Point	25	51.5	77 10.7
Cape Catoche	21	36	87 6	Bahama Isle, West Point.	26	41	79 0
Arenas Isle, Sandy Isle, N. Point	22	8	91 23	Memory Rock	26	57.5	79 5.25
Alacranes, North Point	22	35	89 49	Bermuda, Dockyard, Clock	32	19.0	64 52.0
				„ Light,* 365 feet	32	14.7	64 52.0

XIX. S. AMERICA.	Lat. N.	Long. W.	S. AMERICA.	Lat. S.	Long. W.
Chagres, San Lorenzo Fort.....	9 19.7	79 59.25	Anhatomerim, Isle, Flag-staff ...	27 25.5	48 31.5
Porto Bello, Fort, San Ieronymo .	9 32.3	79 38.5	Rio Grande de Sul *.....	32 7.5	52 5.2
Cartagena de las Indias, Dome ...	10 25.6	75 34.0	Maldonado, Tower	34 54.6	54 55.0
Santa Maria, Morro	11 15	74 16.0	Flores Isle *	34 56.9	55 52.3
Bahia Honda, East Point (Shoal)..	12 19	71 48	Monte Video, Custom House ...	34 54.3	56 9.7
Maracaybo	11 2	71 41	Colonia *	34 28.0	57 49.0
Oruba Isle, North Point	12 36	70 8	Buenos Ayres, Mole, Landing Pl..	34 35.5	58 19.4
Curacao I., Ft. Amsterdam. St. Ann	12 6.3	68 54	Cape St. Antonio, North Point ..	36 18.5	56 43.4
Little Curacao *	12 2	68 38	Cape Corrientes, E. Summit	38 5.5	57 26.8
Buen Ayre Isle, South Point	12 2	68 17	Bahia Blanco, Fort Argentine ...	38 43.8	62 12.3
Orchila, West Point, Rock.....	11 50.2	66 14	Union Bay, Indian Head	39 57.5	62 4.6
Tucacas *	10 47	68 22	Port Desirè, Ruins.....	47 45.0	65 51.8
Porto Cabello	10 29.4	68 0.0	Port St. Julian, Sholl Point.....	46 15.3	67 39.6
La Guara	10 36.7	66 56.5	Port Santa Cruz.....	50 6.7	68 21.1
Cumana, Fort Bocca	10 27.6	64 11.0	Falklands, Eddystone	51 11.30	59 0.9
Tortuga Isle, West End	10 58	65 26.5	West Cay, Jason Isle.....	50 59.8	61 25.1
Margerita Isle, N. Point Cape Isla	11 10	63 58	Port Egmont, Saunders Isle	51 21.0	60 1.6
Trinidad, East Point, Port Galera	10 50	60 54	Port Stephens, E. Entrance, Pt. .	52 12.0	60 38.4
Port Spain, Fort.....	10 38.7	61 32	Port Louis, Carenage	51 32.3	58 4.5
Tobago, North Point	11 25	60 32	East extremity, Cape Pembroke*.	51 40.7	57 40.6
Grenada, St. George, Fort	12 2.9	61 43	Port William, Stanley Harbour, }	51 41.1	57 49.1
St. Vincent, Kingston	13 13	61 13	Government Store		
Barbados, Bridge Tn., Engin. Whf.	13 4.2	59 37	C. Fairweather, Patagonia, S. Pt.	51 32.1	68 53.9
St. Lucia, Port Castres *	14 0	61 1	Port Gallegos, Obs. Mound	51 33.3	68 56.7
Martinique, Fort Royal *	14 36	61 4.25	Cape Virgins, S.E. Point.....	52 20.2	68 19.1
Caravel Rock	14 48.5	60 53	Cape Froward, S. extr. America..	53 53.7	71 15.8
Dominica, Roseau Town, Flag-st.*	15 18.4	61 24.75	Staten Isle, Cape St. John, E. Cliff	54 42.8	63 41.3
Guadeloupe, Basse Terre, Ft. Trois	16 0.5	61 45.25	„ Cape St. Anthony ...	54 43.5	64 43.2
Montserrat, Redondo	16 55.5	62 18.75	Cape Horn	55 58.7	67 13.6
Antigua, English Harb., Dockyard	17 0.0	61 45.7	Orange Bay, W. part Burnt Isle.	55 30.8	68 2.7
„ St. John's, Fort James .	17 6.7	61 51.25	Townshend Harbour, Obs. Islet ..	54 42.3	71 53.1
Barbuda, River Fort, S.W. side .	17 35.8	61 49.5	Cape Inman, Cliff Summit	53 18.5	74 16.9
Nevis, Charleston,* S.W. Point ..	17 8.8	62 42	Famine Port, Tent.....	53 38.3	70 55.4
St. Christopher, St. George's Ch.*	17 18	62 43.0	Cape Pillar, North Cliff.....	52 42.8	74 40.9
Anguilla, Custom House	18 13.2	63 4	Harbour of Mercy, Bottle I., Sum.	52 45.0	74 36.8
St. Bartholomew, Fort Oscar	17 53	62 51.25	Port Otway, S. Entrance, Summit	46 49.5	75 16.9
St. Martin, Fort Marigot	18 4.1	63 5.5	Ypun, or Narborough I., S. Point	44 40.7	74 45.5
Santa Cruz, Christianstad.....	17 44.5	64 41	Port Low, Huacane Isle, S. Point.	43 48.5	74 0.1
Sombrero	18 35.8	63 27.75	Huapilacuy, Point *	41 46.7	73 52.7
Tortola, Fort Burt.....	18 24.1	64 32	Port San Carlos, Point Arena ...	41 51.3	73 53.0
St. Thomas, E. Entr. Ft. Christian	18 20.4	64 55.7	Reloncavi Sound, Port Montt....	41 30.5	72 55.0
Porto Rico, City *	18 29	66 7.25	Valdivia, Fort Corral.....	39 52.9	73 26.0
Mona Isle, East Point	18 5	67 50	Santa Maria Isle, Aguada Point..	37 2.8	73 31.0
Point Barima,* River Orinoco...	8 36	60 23	Talcahuano, Fort Galvez	36 42.0	73 7.0
Cape Nassau.....	7 36	58 56	River Maule, Church Rock	35 19.7	72 26.3
George Town *	6 49.4	58 11.5	Valparaiso,* Ft. San Antonio, S.M.	33 1.9	71°38' 0"
Barbico, Floating Light *	6 19	57 22	Port Huasco, Outer Rk., Inner Pt.	28 27.3	71 16.0
Corentyn, Nickerie Fort.....	5 57.5	56 52	Coquimbo, B., Pajarosninos, N.Rk.	29 55.2	71 22.2
River Surinam, Paramaribo, Ch..	5 44.3	55 13	Port Caldera, Summit of Isle ...	27 3.0	70 53.1
Cayenne, Fort, Flag-staff	4 56.5	52 18.6	Mount Moreno, 4,160 feet	23 28.5	70 35.3
Cape Orange.....	4 22.4	51 24.9	„ Cobiya Bay, Landing Place	22 34.0	70 18.1
Cape do Norte	1 42.0	49 48.0	Iquique, Centre of Island.....	20 12.5	70 11.5
Macapa, N.E. Bastion	0 0.8	50 59.5	Arica, Mole	18 28.1	70 20.7
	Lat. S.	Long. W.	Islay, Arequipa, Custom House..	17 0.0	72 7.3
Para, Custom-House Quay.....	1 26.9	48 27.7	Point Lomas, Flag-staff	15 33.2	74 51.7
Atalaia Point *	0 35.0	47 17.0	Pisco Town, Centre	13 43.0	76 13.5
Itacolomi Point,* Morro	2 19.2	44 23.6	Chincha Isles, North I., Boat-slip	13 38.3	76 24.5
Maranhao, San Luis, Sea Battery.	2 31.7	44 15.6	Chilca Port, S.W. Pitch.....	12 31	76 49.7
Isle St. Anna,*	2 19.4	43 30.3	Cape San Lorenzo *	12 4.0	77 16.5
Ceara, Church Tower.....	3 43.0	38 30.0	Callao, Arsenal, Flag-staff	12 4.0	77 10.5
Port Macoripe *	3 41	38 47.5	Supè Bay, Head of Bay	10 49.7	77 44.0
Cape St. Roque	5 28	35 14.5	Casma Bay, Inner South Point ..	9 28.0	78 22.6
Cape Branco, Extreme.....	7 8.5	34 45.9	Samanco Bay, Cross Point	9 15.5	78 29.7
Pernambuco, Fort Picao *	8 3.6	34 49.7	Truxillo Town, Church	8 7.5	79 1.0
Bahia, Cape St. Antonio *	12 58.3	38 28.2	Lambayeque Rd., Centre of Beach	6 46.0	79 56.5
Morro St. Paolo *	13 22.6	38 51.2	Payta Point, North extremity...	5 5.0	81 10.0
Porto Seguro, Entr. to River	16 26.8	39 0.8	Santa Clara Isle *	3 10.7	80 24.6
Espiritu Sto. B., Convent da Penha	20 19.2	40 13.7	Puna Isle, Church Cross	2 44.1	79 53.2
Cape St. Thomè (banks 15 m. off)	22 2.0	40 56.0	Guyaquil, Arsenal	2 12.4	79 51.4
Cape Frio, South Point *	23 0.7	41 57.1	C. San Lorenzo, Marlingspike Rk.	1 3.5	80 55.0
Rio Janeiro, Ft. Villagagnan, S.M.	22 54.7	43 6' 20"	Port Manta, N.W. Point of Town	0 56.8	80 42.8
Santos Harbour, Arsenal	23 55.8	46 17.8	Juan Fernandez I., Cumberland Ft.	33 37.6	78 50.0
Moela *	24 3.1	46 13.8	Galapagos, Charles Isle, P. O. Bay	1 15.5	90 28.5
Cape Joao Diaz	26 10.3	48 30.0	Cocos Isle, Chatham Bay	5 32.9	86 58.4

XX. ARCTIC OCEAN.		Lat. N.	Long. E.	ARCTIC OCEAN.		Lat. N.	Long. W.
Kola Town, Lapland	68	52.5	83 1.0	Sitka, Arsenal *	57	2.9	135 17.2
Sviatoi Noss, North Tower ...	68	10.0	39 47.0	Mount Fairweather	58	13	136 35
Sosonova	67	41.0	41 2.5	Port Mulgrave, Port Turner ...	59	33.0	139 43.0
Orlovsk *	67	11.5	41 22.2	Mount St. Elias, 16,800 feet ...	60	17	140 52
Sosnovetz, Tower	66	29.5	40 44	Hitchinbroke Isle, South Point .	60	16	146 27
Tetrina, Village Chapel	66	3.9	38 17.5	Port Etches, Russian Settlement	60	21.2	146 32
Cape Touri	66	33	34 28	Montague Isle, West side	60	16	146 50
Kundalakaha Monastery	67	7.7	32 26	Port Chalmers, East Cove			
" River Mouth	65	45.1	34 42.7	Cape Elizabeth, East Point	59	9	151 18
Kemuni, Church	64	56.5	34 38.7	Kodiac Isle, East Point	57	34	151 46
Onega, St. Michael Church	63	53.6	38 8.5	Trinity Is., East Point, Rocks ..	56	34	153 22
Jaghinsk Isle, North Point * ...	65	12.3	36 51.5	Alentian Isles.			
Pertominak, Monastery	64	47.2	38 29.2	Ounalaska, Illuluik Port	53	52.4	166 32.0
Archangel, Trinity Church ...	64	32.1	40 33.5	" South Point	53	14	167 47
Moudiuga Isle, * Dvina River ...	64	55.8	40 16.2	Bogoslov Isle, South Peak	53	56.3	167 58
Cape Kerets	65	19.9	39 45	Goreloy, or Burning Isle, Snow .	51	56	178 40
Cape Voronoy	66	31.1	42 19.7	St. Paul Isle, East Point	57	20	169 14
Moriovetz, N.W. Point *	66	45.7	42 29	Bristol Bay, Cape Techichagoff .	58	17	157 54
Mezen, Epiphany Church	65	50.3	44 17	" Cape Constantine .	58	29	158 45
Cape Knouchin, near Brook	67	11.5	43 48.7	Cape Newenham	58	42	162 24
Cape Kanin, Noss	68	39.2	43 48.7	Nuniwak Isle, N.E. Point	60	32	165 30
Kolguyev Isle, North Point	69	30	49 20	Isle St. Matthew, S.E. Point ...	60	18	172 4
Cape Mikoulkin	67	47	46 32	" North Point .	60	44	172 52
Vaigatch Isle, North Point	70	28	59 10	Isle St. Lawrence, West Point. .	63	34	171 45
" South extremity .	76	20	73 10	Cape Roumianstov	61	49	166 18
" West extremity ..	72	5	51 25	Port Clarence, Port Spencer ...	65	16.7	166 48.0
Nova Zembla, Mount Pervo- ous Motrennaia	72	54	53 22	Cape Prince of Wales	65	33	167 59
				Kotzebue Sd., C. Espenberg, E. Pt.	66	33	163 28
" Admiralty Penins., W. Pt.	75	0	55 22	" Chamisso Isle	66	13.2	161 46.0
" Cape Nassau	76	35	62 40	Cape Lisburn	68	52	166 6
" N.E. Point Cape Jelanie ..	76	58	76 40	Icy Cape	70	20	161 46
Spitzbergen, Cloven Cliff	79	50.0	11 40.5	Point Barrow	71	24	156 20
" Magdalena Hook	79	31	10 41	Point Beechey	70	24	149 37
" Treurenberg B. Hecla Cove	79	55.3	16 52	Herschel Isle, South Point	69	34	139 3
" Verlegen Hook	80	2	16 37	Mount Cupola	68	45	137 53
" Black Point	80	28	19 28	Mackenzie River, West Mouth..	68	49	136 37
" South Cape, or C. Look-out	76	35	17 23	Cape Bathurst	70	36	127 35
" Ryk Isle	77	50	26 10	Cape Parry, N.E. Point	70	6	123 35
" Fair Foreland	78	53	10 35	Coppermine River, Mouth, E. side	67	48.5	115 31.25
Maksimov Isle	74	20	76 30	Cape Franklin	68	38	109 4
Bielor Isle, Cape Schubert	73	20	72 20	Melbourne Isle, East Point	68	32	104 30
N.E. Cape of Obi Gulf	73	12	77 0	White Bear Point	68	7.1	103 36.7
Cape Timour	77	0	97 30	Point Ogle	68	14.0	96 4
Cape Sievero, Vortochni	78	20	100 0	Castor and Pollux River	68	28.5	94 14
Olensk River, Mouth	73	0	118 50	Aberdeen Isle, West end	68	36	93 10
Lena River, Mouth, N. Point * .	73	30	126 30	Baring Isle, Nelson's Head ...	71	5	123 0
C. Mourachi, Mouth of the Jana	71	35	135 50	" Ballast Beach	74	27	122 32.3
Liakhov Islands, East Point	75	10	150 30	" Cape Crozier	74	30	121 30.8
Liakhovski Isle, South Point ...	73	20	140 15	" Bay of Mercy	74	6	117 55
Cape Sviatoi	73	2	141 30	" Cape Hamilton ..	74	15	117 30
Mouths of Indagurka R., E. Point	71	0	151 40	Melville Isle, Winter Harbour	74	47.2	110 48.25
Bear Islands, East or Column Isle	70	38	162 20	Cape Providence	74	20	112 30
" West Isle	70	50	160 35	Byam Martin Isle, South Point .	75	0	104 8
Cape Chelagskoi	70	2	170 47	Bathurst Isle, Cape Cockburn..	75	3	100 23
Cape Severni, or North Cape ..	68	55	179 57	Lowther Isle, South Point	74	26	97 40
Kolioukhin Isle, South Point ...	67	27	184 24	Griffith Isle, South Point	74	28	95 20
Cape Serdze Kamen	67	12	188 20	Cornwallis' Isle, East Point	74	38	93 34
Cape Vostoichin, or East Cape..	66	3	190 16	Beechey Island	74	43.5	91 39.3
St. Lawrence B., E. Pt., Entrance	65	37	189 11	Port Leopold	73	50	90 15
Cape Tchoukotski	64	17	187 46	Cape Bullen	74	22	85 0
Cape Navarin	62	16	178 56	Possession B., S. Entr. Lancaster	73	30	77 20
Cape Olyutorski	59	57	170 19	Sound			
Karaghin Isle, North Point	59	13	164 38	Bellot's Straits, Dépôt Bay	72	0	94 0
" South Point	58	28	163 27	Fury Point	72	50	92 0
Mednoi Isle, South Point	54	33	168 11	Cape Felix	69	55	98 5
Behring Isle, West Point	55	17	165 46	Victory Point, K. William's)	74	43.4	91 39.3
" South Point	54	43	166 44	Land, the Franklin Record..)			
Cape Kamchatka	56	0	163 10	Cape Herschel	68	42	98 2
Kluchevski, 16,131 feet	56	8	160 41	Magnetic Pole (1831)	70	5	96 47
Cape Kronotski	54	54	162 35	C. Parry, Whale Sound, S. Head	77	6	71 23
Kronotski Peak, 10,610 feet ...	54	45	160 35	Kane's Furthest, Mount Parry	82	30	66 0
Cape Shipounski	53	6	160 4	Cape Bellot	82	1.9	68 10
Mount Vilutchin, 7,060 feet ...	52	47	158 22	Cape Jefferson	81	0	67 40
				Cape Andrew Jackson	80	17.6	66 40

ARCTIC OCEAN—continued.		Lat. N.	Long. W.	ARCTIC OCEAN.		Lat. N.	Long. W.
Cape John Barrow.....		80 17.3	69 58	Labrador, Black Head.....		60 0	64 28
Cape Winfield Scott.....		79 6.8	66 49	Mount Thoresby, Port Mauvers..		56 58	62 27
Rensselaer Bay		78 38.0	71 14	Cape Harrison.....		54 54	58 5
Cape Inglefield.....		78 34.5	72 51	Gannet Islands, Sandwich Bay..		54 0	56 34
Cape Dudley Digges.....		76 5	68 46	Cape St. Lewis.....		52 21	55 39
Cape York.....		75 55	65 30	Table Head.....		52 6	55 43
Sanderson's Hope (Upernavik) .		72 42	56 10	Belle Isle, N.E. Point.....		52 1	55 17
Disco Isle , South Point.....		69 11	53 20	Newfoundland , Quirpon Isle, }		51 38	55 24
„ West Point.....		69 53	54 53	North Point.....		51 2.4	55 46
Whaletish Islands, Kronprind- }		68 58.9	53 14.0	Croc Harbour, S. Point, Entrance		50 54	55 50
sen's Isle, Flag-staff.....				Rouge Harbour, Entr., S. Point.		50 11	55 42
Lichtenfeld.....		63 2	51 40	St. Barbe Islands, East Point...		50 0	55 20
Cape Comfort.....		61 44	50 0	Cape St. John, North Bill.....		49 16	53 31
Cape Farewell		59 49	43 54	Cape Freels.....		48 42	53 8
Igloodik Isle.....		69 21	81 31	Cape Bonavista*.....		48 21	53 24
Winter Isle, Melville Pen., S. Pt.		66 11.4	83 10.0	Trinity Harbour, Hog Nose....		47 48	51 51
Salisbury Isle, East Point.....		63 27	76 40	Cape St. Francis.....		65 5	13 33
Bulton Isle, N.E. Point.....		60 45	64 58	Iceland , E. Extr., Pt. Gepirhuk.		66 28	22 29
Resolution Isle, East Point.....		61 30	64 30	„ North Cape.....		65 30	24 35
„ S. Pt., N. Entr. Hudson's }		61 21	64 54	„ W. Pt., or Staalburghuk		64 8.4	21 58
Straits.....				Reikiavig.....		63 58	19 44
Cape Chidleigh		60 25	65 0	Mount Hecla, 5,364 feet.....		63 48	22 45
York Factory, Hudson's Bay...		57 0	92 19				
Cape Henrietta Maria.....		55 10	82 30				

ANTARCTIC OCEAN.		Lat. S.	Long. E.	ANTARCTIC OCEAN.		Lat. S.	Long. W.
Ross's Furthest.....		78 4	161 0	South Shetlands , C. Possession		63 45	61 50
Mount Erebus, 12,400 feet....		77 33	166 58	„ Deception Isle, Port Foster.		62 55.6	60 35.0
Mount Sabino.....		71 42	169 55	New Orkneys , E. Extremity...		60 49	44 20
Balleny Islands.....		66 44	163 11	„ Coronation Isle, E. Summit		60 46	45 53
Adelie Land, Geology Point...		66 35	140 10	Sandwich Islands, Candlemas Isle		57 10	26 45
Enderby's Land.....		67 30	44 0	South Thule Islands, E. Point..		59 26	27 13
Marion and Crozet's Isle, Hog I.		46 9	50 28	South Georgia, North Point...		53 57	38 13
Kerguelin's Land, Christmas }		48 41	69 6	Bouvet's or Circumcision Isle..		54 20	6 0
Harbour.....							

MID-ATLANTIC.		Lat. S.	Long. W.	MID-INDIAN OCEAN.		Lat. S.	Long. E.
Region of Submarine Volcanoes.		7N. to 1S.	16 to 24W.	Great Chagos Bank, East extr..		6 5	72 43
Penedo de San Pedro, or St. }		0 55.5N.	29 22.0	„ North extremity.....		5 39	72 1
Paul's Rocks, Summit.....				„ N.W. extr., Eagle }		6 10.5	71 18
Fernando de Noronho, Concep- }		3 50.0	32 25.0	Isle, N. Point....		7 26.0	72 23.2
cao Fort.....				Diego Garcia S. Point.....			
Rocas, N.W. Cay.....		3 51.5	33 49.0	Cargados		16 40.7	59 33.5
Trinidad Isle.....		20 31	29 19	Baleine Shoal.....		16 36.0	59 33.2
Martin Vas, Large Isle.....		20 28	28 51	Frigate Isle.....		16 32.7	59 32.7
Tristan d'Acunha, Waterfall, }		37 1.9	12 17	Pearl Isle.....		16 28.2	59 37.2
North side.....				Siren Isle.....		16 26.5	59 39.0
Inaccessible Isles, West one....		37 17	12 36	Establishment.....		16 23.3	59 41.0
Nightingale Isle.....		37 27	12 29	North Isle.....		16 15.0	59 37.7
Gough's Isle.....		40 19	9 44	Albatross Isle.....		38 43	77 34
Saxenburg.....		31 35	16 0	St. Paul's Isle, Ninepin Rock on }			
				East side.....		37 52	77 35
Mid-Pacific.				Amsterdam, Summit.....		12 5.4	96 53.0
Easter Isle.....		27 6	109 17	Direction Isle, S.W. Point.....			
Pitcairn Isle.....		25 3.6	130 8				
Masafuera Isle.....		33 49	80 54				

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